SERVICE MANUAL

SANYO

COMPACT DISC PLAYER

CP10

(GENERAL)
(U.S.A)
(CANADA)
(AUSTRALIA)
(EUROPE)
(ITALY)

CONTENTS

SPECIFICATIONS 1
BEFORE DISASSEMBLING AND REPAIRING 1
PRECAUTION FOR HANDLING PICKUP 2
DESCRIPTION OF LASER BEAM CONTROL CIRCUIT 3
DETAILS OF PICKUP 4
DISASSEMBLY 5
ADJUSTMENT 8
NORMAL WAVE FOAM OF TEST POINT 11
IC BLOCK DIAGRAM 14
EXPLODED VIEW (CABINET) 24
PARTS LIST 25
EXPLODED VIEW (MECHANISM) 30
PARTS LIST (MECHANISM) 31
BLOCK DIAGRAM 32
WIRING CONNECTION DIAGRAM 34
SCHEMATIC DIAGRAM 36
WIRING DIAGRAM (MAIN) 38
SCHEMATIC AND WIRING DIAGRAM (AC SOCKET, DC POWER P.C.BOARD) 40
TROUBLESHOOTING FLOW CHART 42
WIRING DIAGRAM (OTHERS) 44
IC BLOCK DIAGRAM 45

WM-17964

SPECIFICATIONS

Audio

Channels . . . . . 2 channels
Frequency response . . . . 20 – 20,000 Hz
Dynamic range . . . . . 90 dB
Channel separation . . . . . 80 dB (1 KHz)
Distortion . . . . . 0.01% (1 KHz)
Wow and flutter . . . . . Undetectable
Outputs . . . . . LINE OUT: 1.6V/50K ohms
HEADPHONE: 30mW/32 ohms

Signal format

Sampling frequency . . . . 44.1 KHz
Quantization . . . . . 16 bits linear/channel

Pickup

System . . . . . Objective drive system light pickup
Light source . . . . . Semiconductor laser
Wave length . . . . . 790 nm

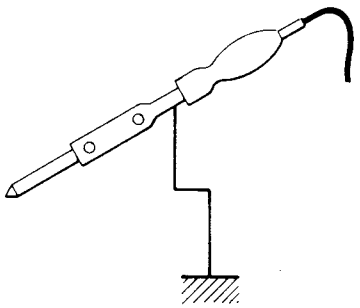
General

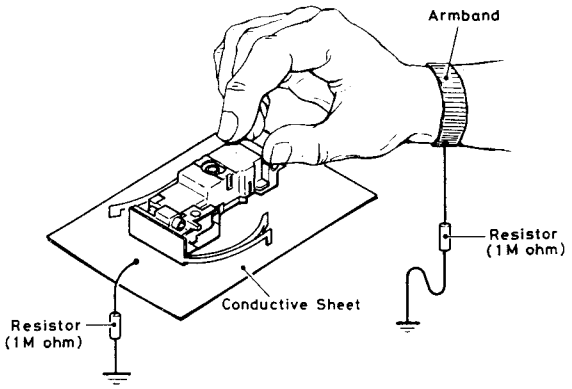
Power supply . . . . . AC 110-127/200-220/230-250V 50/60Hz ... GENERAL
AC 120V 60Hz ... U.S.A, CANADA
AC 240V 50Hz ... AUSTRALIA
AC 220V 50Hz ... EUROPE ITALY
DC ±7.2V ~ 8.4V
Power consumption . . . . 10 W
Dimentions . . . . . approx. 127 x 41.5 x 187 mm
(W x H x D) (5" x 1-5/8" x 7-3/8")
Weight (approx.) . . . . . 900 g (1 lbs. 15 oz.)

Specifications and design subject to change without notice.

BEFORE DISASSEMBLING AND REPAIRING

a Many ICs and a pickup are used in this compact disc player and these components are very sensitive to static electricity and can break down if exposed to a high static voltage. They must therefore be handled very carefully.
b Since pickup consists of many optical components and other precision components, do not repair it or store it in a hot or humid place, near strong mangetic fields, or in a dusty location.
c When replacing any of the components of a CD player, first switch OFF the player and disconnect the power cord from the player.
d Ground all equipments, measuring instruments, and tools.
e Place an electrically conductive sheet on the work bench and ground it. After removing a pickup from its conductive pouch, do not place it on the pouch. Because it may be damaged due to static electricity.
f Ground a soldering iron to prevent AC leakage.
g Ground a worker with metal band (1M ohms) to ground static electricity which may build up on the body.
h Because static electricity which builds up on clothing does not ground through the metal band, be careful not to touch your clothing to the pickup.
i Do not directly look at the laser beam emitted from the pickup or aim it at your fingers or skin.



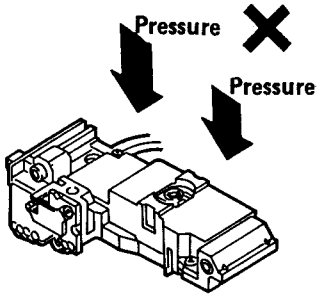


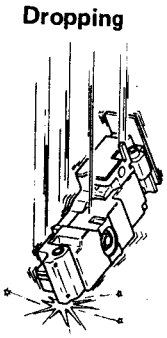
PRECAUTION FOR HANDLING PICKUP

(1) Precautions for transportion and storage

a Store the pickup in its conductive pouch until just before using it.

b Do not apply external pressure or shock to the pick-up.





(2) Precautions for handling of the pickup

a Since the pickup has a powerful magnet in itself, do not leave it near a magnetic field.

b When handling the pickup, hold it correctly, and do not apply external pressure or shock to it. If you apply extremely strong pressure or shock to it, it may mulfunction or its printed circuit board may crack.

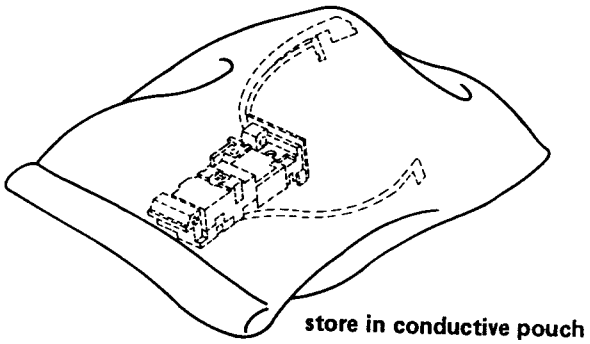
c The pickup is a single component and has been accurately adjusted as such. Do not touch any adjustment point and mounting screws.

d If the laser beam strikes your eye, it may be damaged. Do not under any circumstances allow the laser beam to strike the eye. Also, do not under any circumstances apply a voltage to a pickup whose laser output section (objective lens, etc.) is damaged.

e Cleaning lens surface

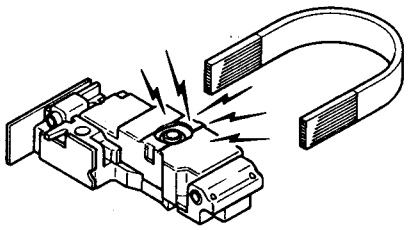
If dust gets onto the surface of the lens, blow it away using an air brush. The lens is retained by an extremely delicate support spring. When cleaning the lens surface, therefore, use a soft cotton stick moistened with iso-propyl alcohol and clean the lens very gently, taking care not to bend the support spring. (other liquid may injure the lens) Also, do not use an excessive amount of cleaning fluid otherwise it will flow into the pickup.

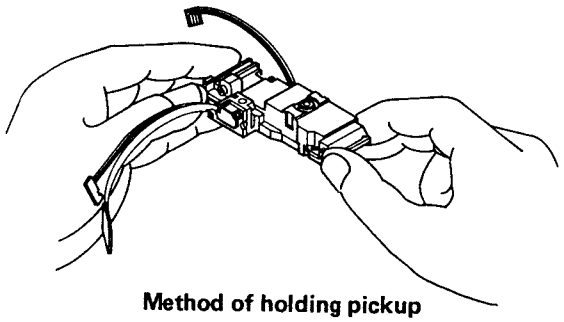
f Do not disassemble the pickup.



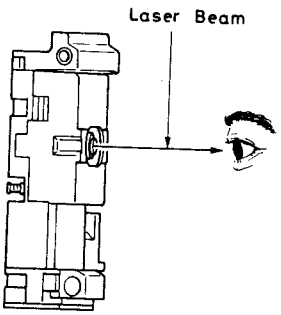
store in conductive pouch

Magnet

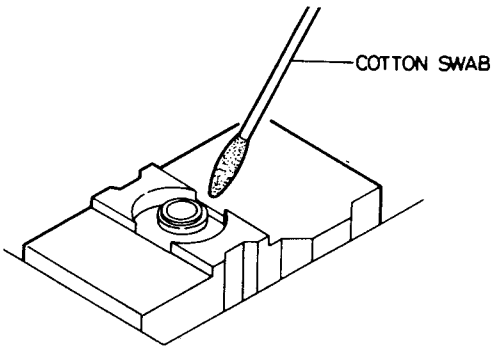


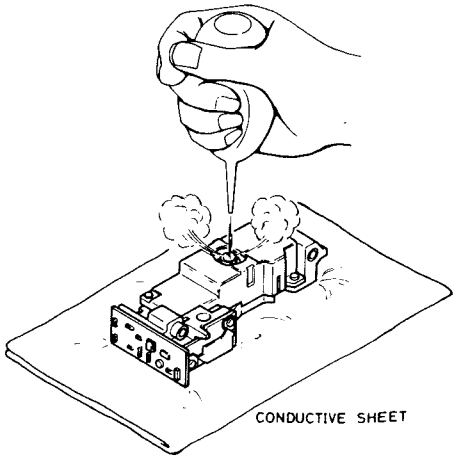


Method of holding pickup



Do not directly look at the laser beam or aim it at the fingers or skin.





DESCRIPTION OF LESER BEAM CONTROL CIRCUIT

(1) Laser operation circuit

(2) Operation of the circuit

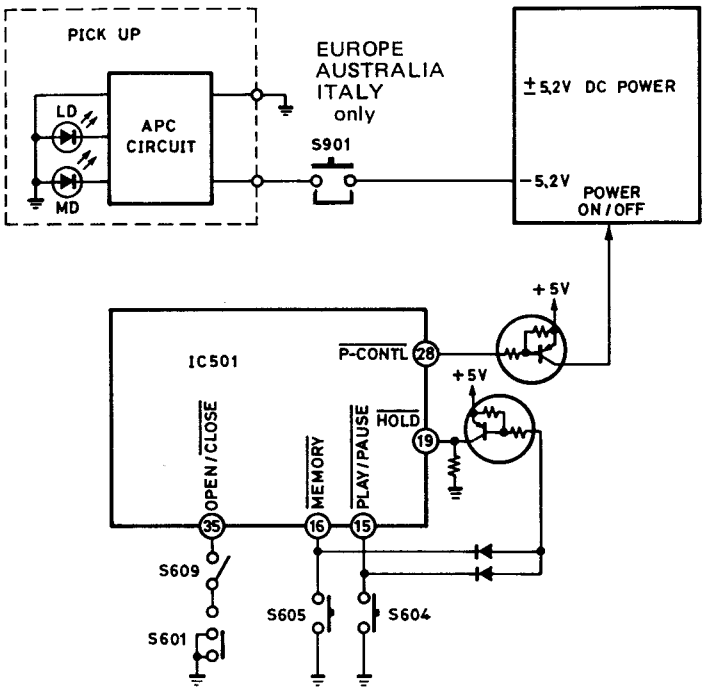
a By turning "ON" the POWER switch (S601) after the power cord is plugged in or the battery pack is connected to the unit, then closing the top lid, the CLOSE switch (S609) [and LASER switch (S901) ..... EUROPE/AUSTRALIA/ITALY only] will go "ON", and pin 35 of IC501 (OPEN/$\overline{\text{CLOSE}}$) becomes "LOW" level.

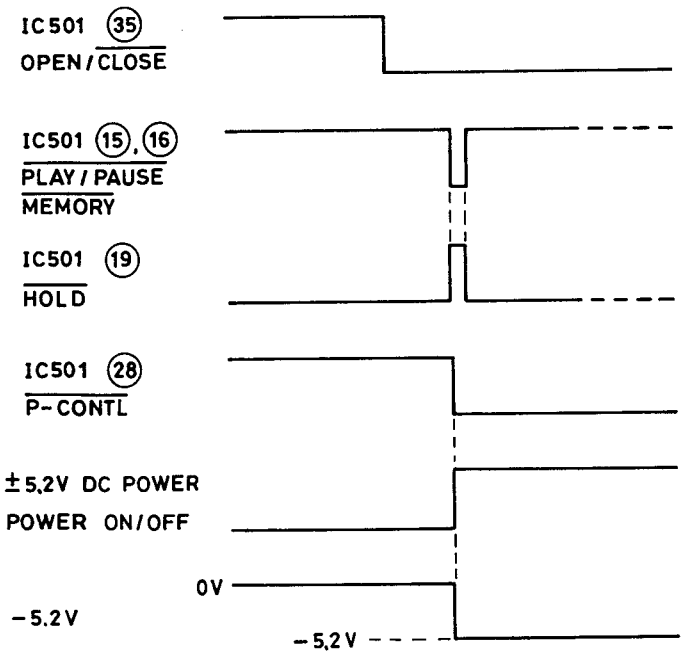
b Press the PLAY key (S604) or the MEMORY key (S605). While the key is pressed, pin 15 ($\overline{\text{PLAY/PAUSE}}$) or pin 16 ($\overline{\text{MEMORY}}$) of IC501 becomes "LOW".

c Pin 19 ($\overline{\text{HOLD}}$) of IC501 becomes "HIGH", and the hold condition of IC501 will be cancelled.

d Consequently, pin 28 ($\overline{\text{P-CONTL}}$) of IC501 becomes "LOW", and "HIGH" voltage will be applied to the POWER ON/OFF terminal of the ±5.2V DC POWER BLOCK via Q502.

e −5.2V output from DC POWER BLOCK is applied to the APC circuit of the pickup, and causing the pickup emits the laser beam.





Safety Operation

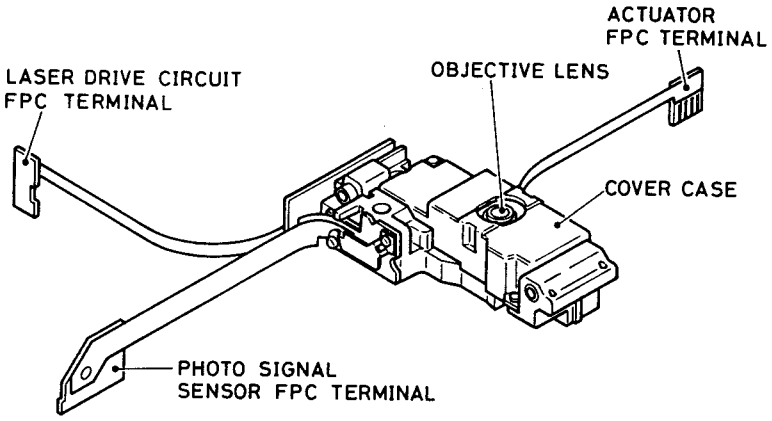
a When the top lid of the unit is open with the POWER switch is "ON", even if you press the PLAY key or MEMORY key, the pickup will not emit laser beam because the CLOSE switch (S609) [and LASER switch (S901) ..... EUROPE/AUSTRALIA/ITALY only] is "OFF" and pin 35 of IC501 remains "HIGH".

b When the PLAY or MEMORY key is pressed without loading a disc, the pickup emits laser beam, but several seconds later it will stop to emit laser beam as safety circuit defects that there is no disc.

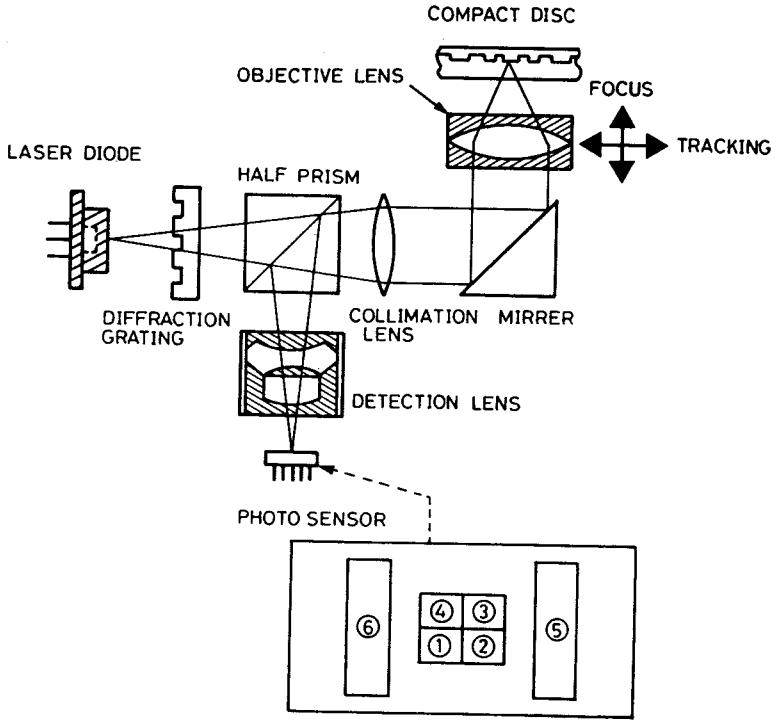
c Even in the event that IC501 breaks down and the pickup emits laser beam, it will not directly enter the eye because of the opaque cover.

DETAILS OF PICKUP

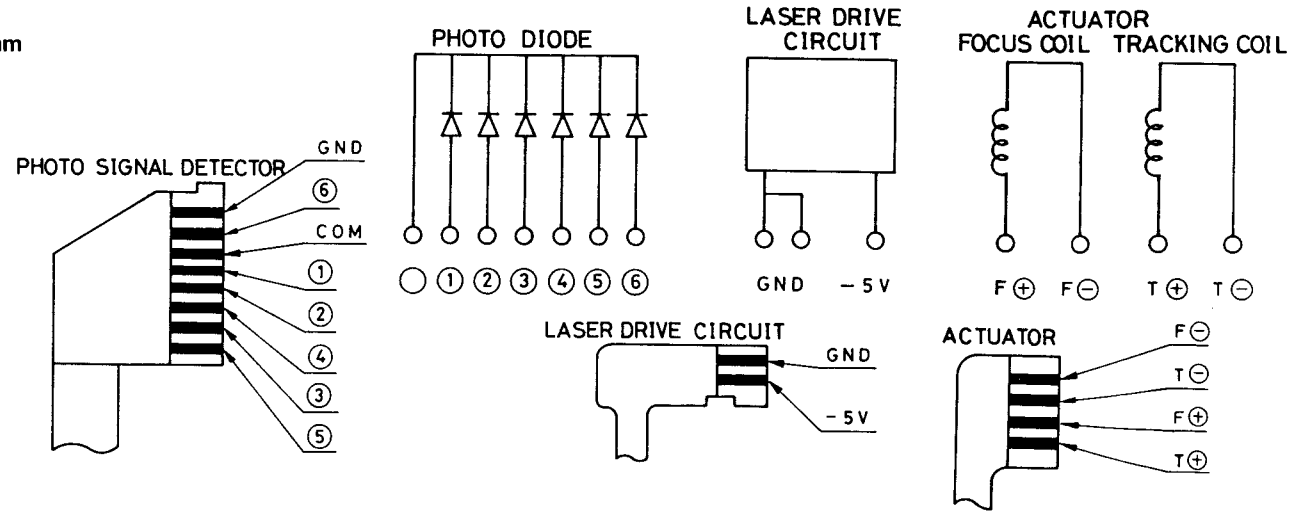
(1) Appearance



(2) Optical system



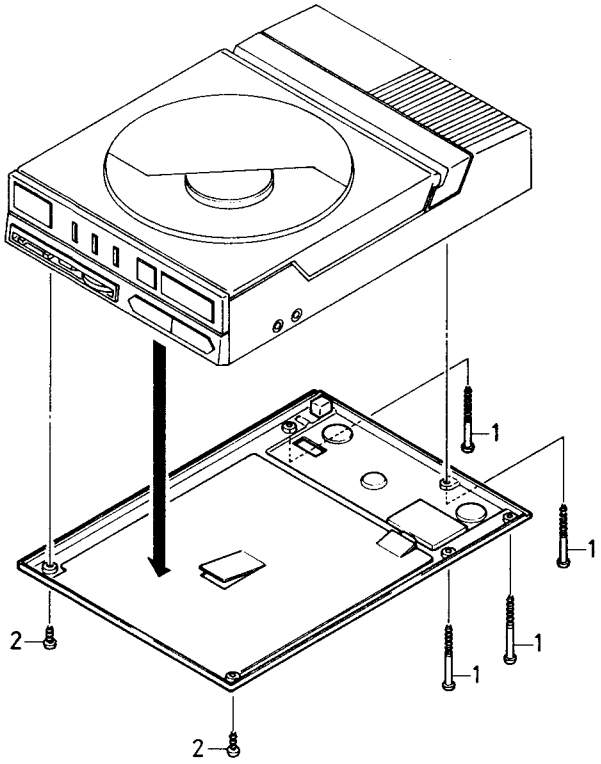
(3) Wiring diagram



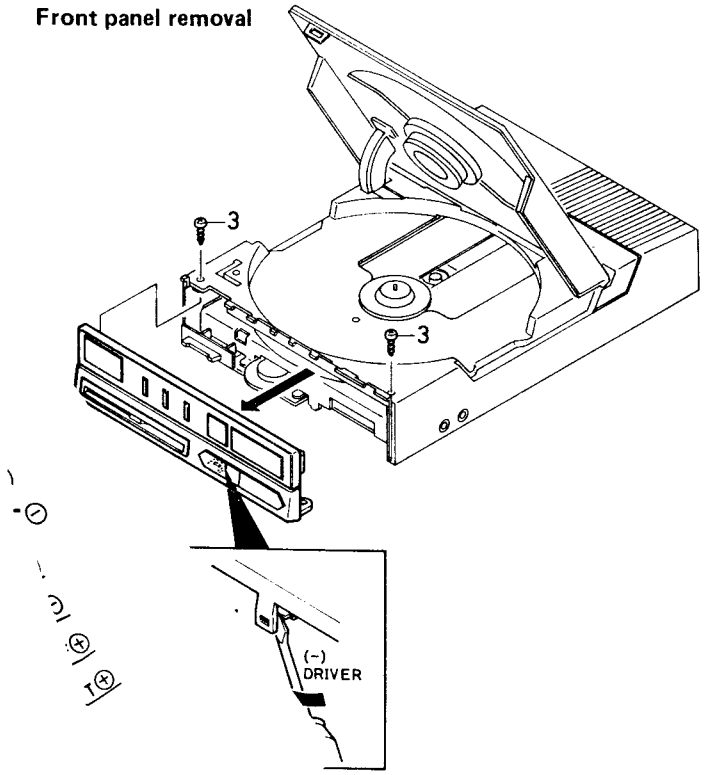
DISASSEMBLY

* If there is a compact disc (CD) in the player, remove it.
* Disconnect the power plug from the player.
* Disassemble the player in the following sequence:

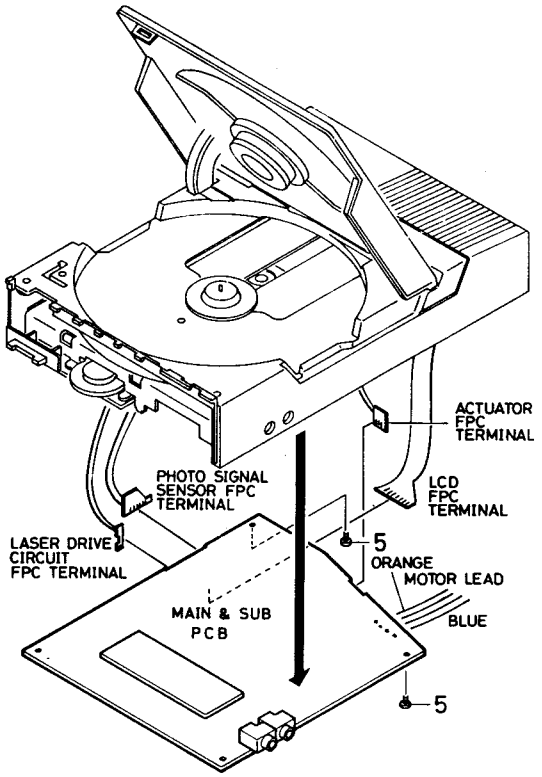
(1) Bottom lid removal



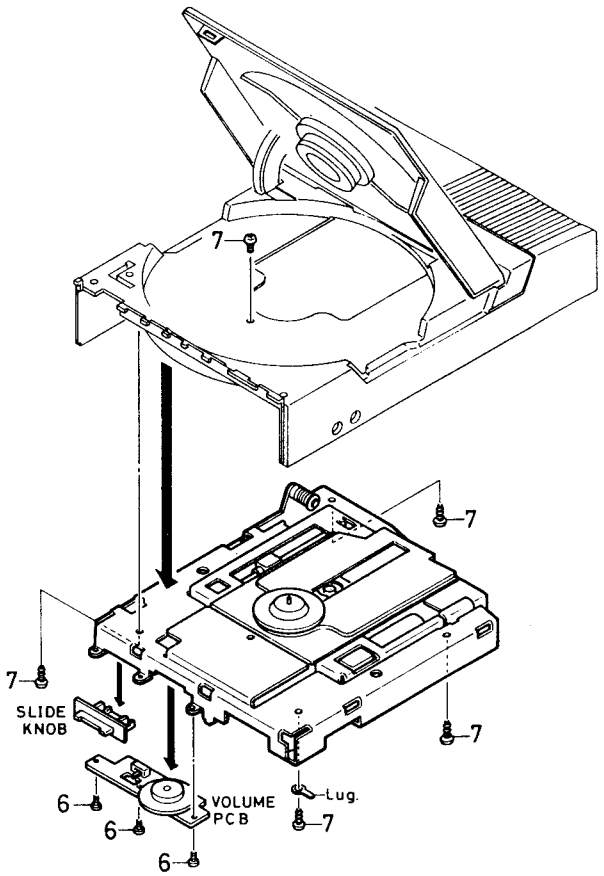
(2) Front panel removal



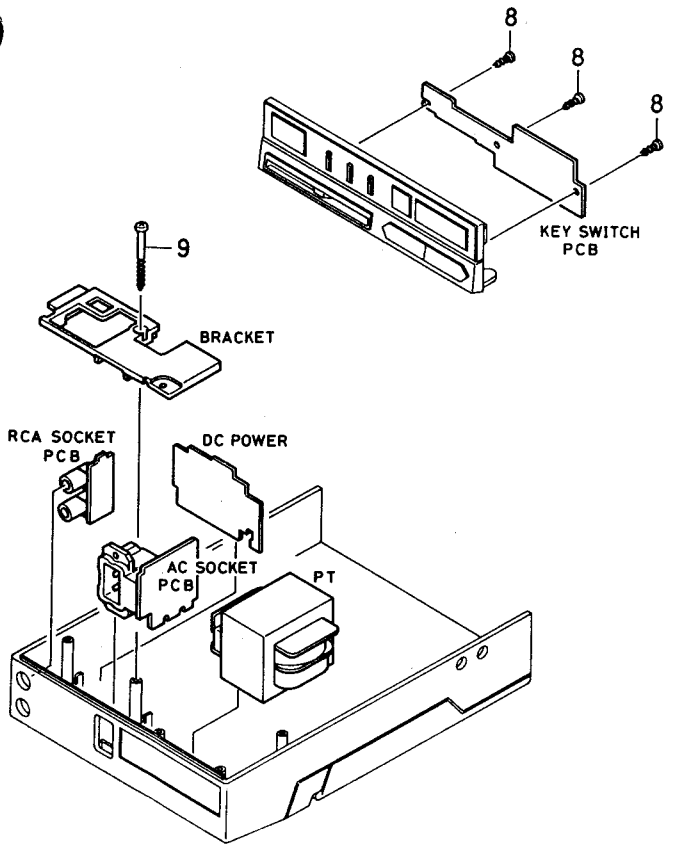
(3) Main and Sub PCB removals



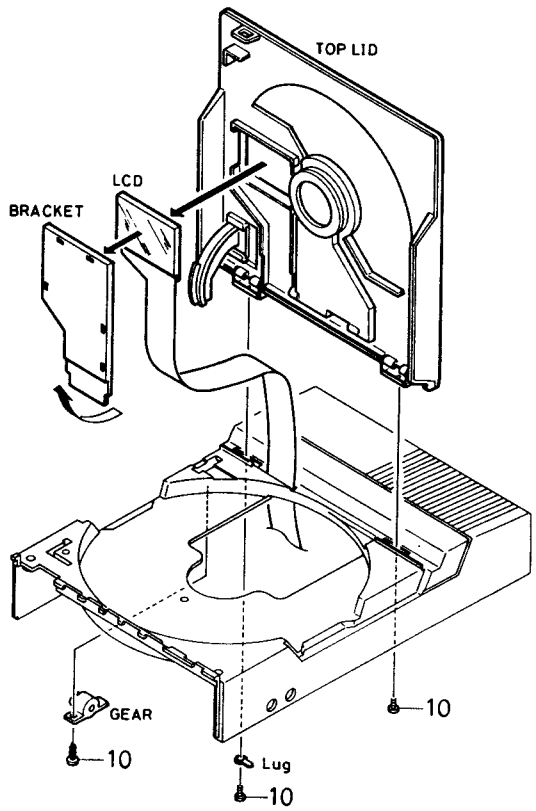
(4) Volume PCB removal



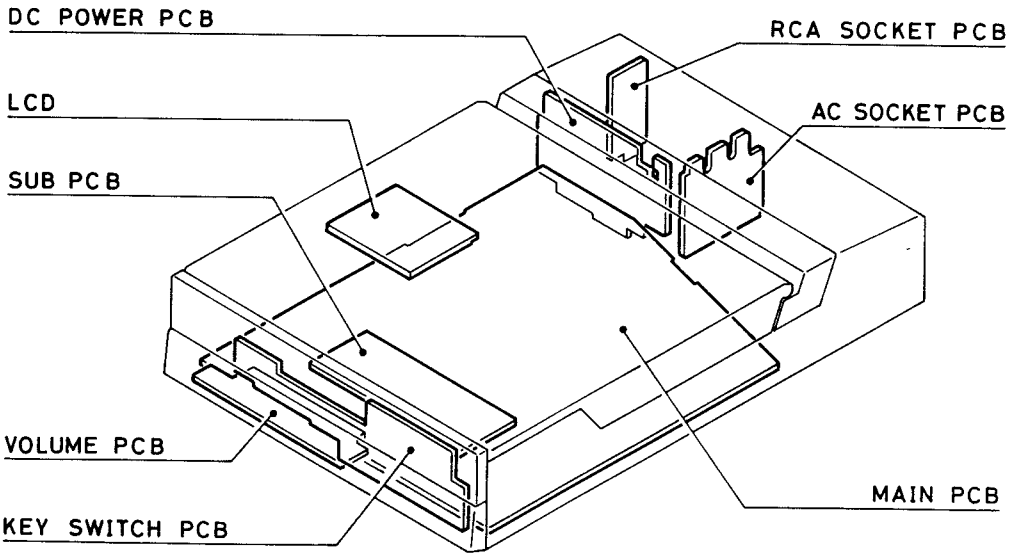
(5) Other PCB removal



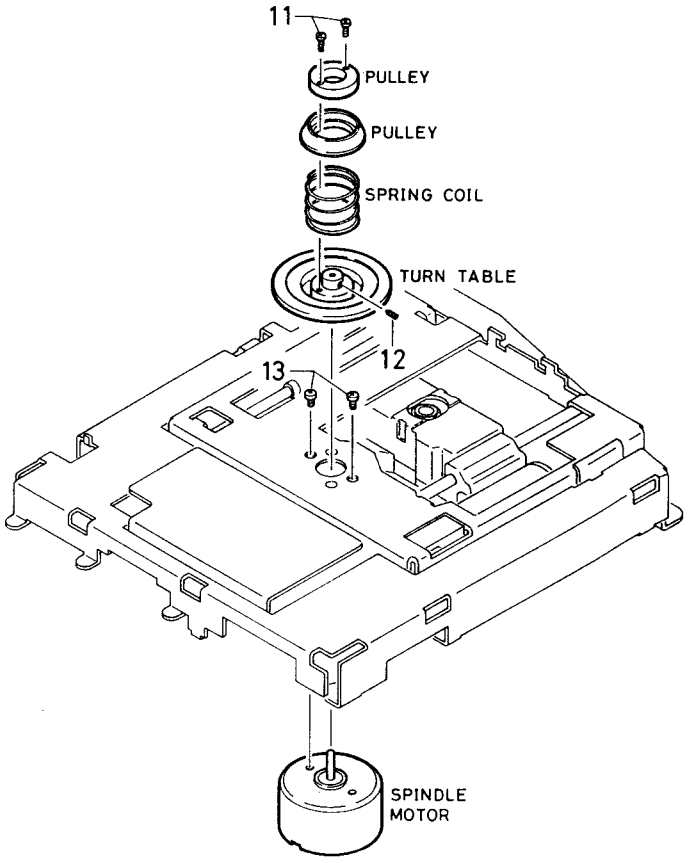
(6) Top lid and LCD removals



(7) Circuit bord arrangement figure

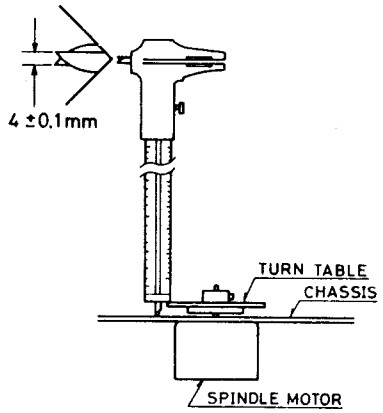


The compact disc is a very delicate mechanism.
It is very Important that the spindle motor (which rotates the disc), the sled motor, the worm gear, etc.all operte smoothly and without eccentricity.
Care must be taken not to excrt excessive force on the pickup and particular care must be taken not to touch either the lens or the lens-control circuitry.replacement of the spindle motor



(8) Replacement of spindle motor

a Remove the two screw (Y13) which hold escutcheon mecha cover (see exploded view, Ref no 15, 16 of page 30.)
b Remove the two screw (11) then, after removing the upper pulley, universal pulley and spring.
c Loosen screw (12) which hold tarntable.
d Remove the two screw (13) and then replace the spindle motor.
e After fixed the spindle motor, set the turntable upper surface so that ti is 4mm ± 0.1mm above the chassis.
f With the smaller diameter end of the spring coil upward, install the universal pulley and upper pulley, and then secure by using the two screws (11) for holding the supper pulley.
g Check to be sure that the universal pulley moves smoothly up and down.

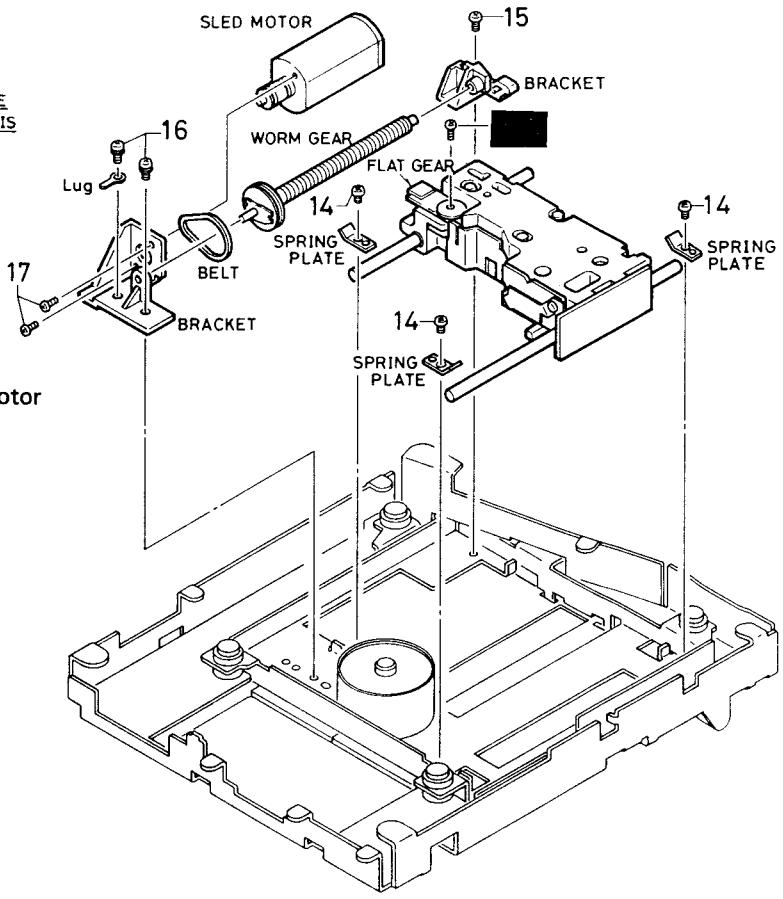


(9) Replacement of sled motor and belt

a Remove the screw and spring plate with flat gear.
b Remove the screw (15) which hold worm gear.
c Remove the two screw (16) which hold sled motor bracket.
d Remove the two screw (17) which hold sled motor.
e Replace the sled motor and belt.

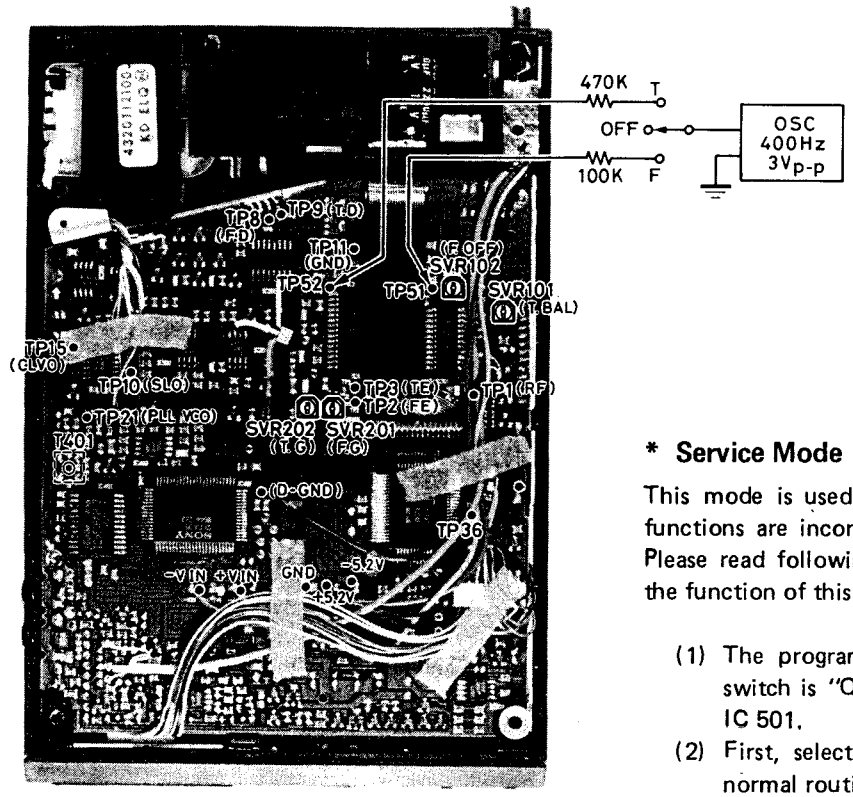
(10) Replacement of pick-up

a Remove the screw and springplate with flat gear.
b Remove the screw (14) and spring plate.
c Replace the pick-up.



ADJUSTMENTS

Before making adjustments, please read the "before disassembling and repairing" "precaution for handling pickup" "description of leser beam control circuit"and "disassembly"



* Service Mode

This mode is used for adjustment when servicing and its functions are incorporated in the microcomputer (IC501). Please read following explanation carefully to understand the function of this mode.

(1) The program of IC 501 operates when the power switch is "ON" and reset signal is input to pin 18 of IC 501.
(2) First, select either a service program routine or a normal routine.
(3) If you select a service program routine, the microprocessor brings the necessary work from each subroutine in accordance with the key inputs, then executes the work.
With this service mode, you can efficiently check operations.

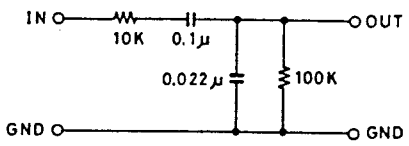
Test disc necessary for adjustment

Demonstration disc	YEDS 18 (Sony)

Measuring equipment necessary for adjustment

Equipment	Model No. (manufacturer)
Synchroscope	SS5711 (100 MHz – Doble reflective
Memory scope	DSS 6521 (storage scope) kikusui Denshi
AC digital voltmeter	Digital tester or digital multimeter is available
DC digital voltmeter	Digital tester or digital multimeter is available
Audio signal generator	
Band pass filter	Band pass filter (see attached drawing)

BAND-PASS FILTER



Notes;
a Other manufactures' equipment which has same specifications with ones designated above may be used.
b Use a probe when observing signal using an oscilloscope, memory scope or digital voltmeter.

1. Setting the service mode

(1) Disconnect the AC power plug from the unit.
(2) Press the PLAY/PAUSE key or the MEMORY key due to discharge C904 connected to pin 18 of IC 501 (RESET) and the +V IN smoothing capacitor (C951). Consequently, pin 18 of IC 501 becomes "LOW".
(3) Ground the pattern of TP36 (see wiring diagram of page 38 ~ 39) using jumper wire.
(4) Two kind of IC is used as IC501 in this unit. Follow step according to the particular part No. concerned.

TMP47C420AF8172Z . . .Connect the AC power plug. (This mean is not operation of the power switch ON/OFF)

TMP47C420AF8173Z . . .Connect the AC power plug while pressing the PLAY key.

The player will be in the service mode and the LCD displays " 00 00 00 "

2. Particular operation in service mode

(1) When the SKIP/SEARCH key is pressed, the pickup moves to the outermost or innermost portion of the disc. This enables to check the operation of the sled motor.
(2) When the MEMORY key is pressed, the pickup perform a focus search. If a disc is loaded in the unit, the focus servo will go "ON". If a disc is not loaded, the focus search will take place indefinitely.
(3) When the REPEAT key is pressed in the condition of step 2, the tracking servo will go "ON", and the unit will go into a play condition.
(4) When the STOP key is pressed at any operating mode, you can cancel the ongoing operation.

3. Cancelling service mode

Disconnect the AC power plug, and then remove the jumper wire from the pattern of TP36. (See the wiring diagram of page 38 ~ 39.)

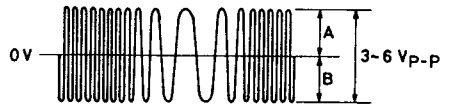
Tracking balance adjustment

Test disc ; YEDS 18 (Sony)
Measuring equipment ; Oscilloscope
Connection point ; TP - 3
Adjustment point ; SVR - 101
Adjustment value ; Waveform symmetry

a Put the unit in the service mode.
b Load the test disc and then press the MEMORY key. The disc will rotate and the focus servo will go ON.

Note: If the pickup is at the innermost track, first press the ▶▶| key to move the pickup slightly to the outside and not to play the TOC (zero pattern) on the disc.

c Observe the tracking error signal (from TP3) on the oscilloscope and adjust SVR101 so that the waveform becomes symmetrical with respect to 0 V. (See Fig. 1.)



A = B

Fig. 1.

Focus offset adjustment

Test disc ; YEDS 18 (Sony)
Measuring equipment ; Oscilloscope
Connection point ; TP - 2 (FE-Signal) TP - 1 (RF-Signal)
Adjustment point ; SVR102 SVR 102
Adjustment value ; Voltage when unit in PLAY = Voltage when unit in STOP status

a Connect the oscilloscope to TP2 (FE signal).
b Connect the oscilloscope to TP1 (RF signal).
c Follow steps (a) and (b) of the "Tracking balance adjustment" to turn the focus servo "ON".
d Press the REPEAT key. The tracking servo will go ON, and the player will be in a play condition.
e Measure the DC offset voltage of the waveform [focus error signal from TP2] using a DC voltmeter, and note the measured value.
f Press the STOP key and remove the disc.
g Adjust SVR102 so that the DC offset voltage at TP2 becomes the same as the voltage measured in step (e).
h Re-load the disc, and then follow the steps (c) and (d) to put the unit in a play condition. (MEMORY key "ON" → REPEAT key "ON".)
i Confirm that the 'a' portion of the waveform (RF signal) from TP1 must be a straight line, and the 'b' portion (eye pattern) must be open. (See Fig. 2). Also, verify that the height of the wave is maximum.

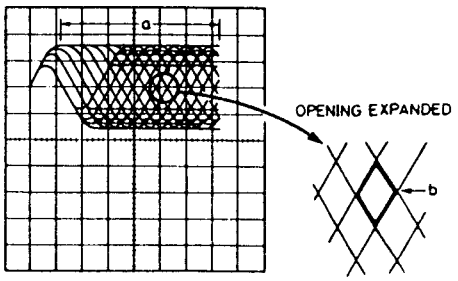


Fig. 2

PLL VCO adjustment

Test disc ; YEDS 18 (Sony)
Measuring equipment ; Oscilloscope
Connection point ; TP - 21 (PLL VCO OUT)
Adjustment point ; T 401
Adjustment value ; DC 1.2 ± 0.1V

a Connect the oscilloscope to TP21 (PLL–LPF output signal).
b Play the test disc.
c Adjust T401 so that the dense portion of the waveform [output signal from low pass filter (LPF) of PLL circuit] on the oscilloscope becomes DC 1.2 ± 0.1 V. (See Fig. 3.)

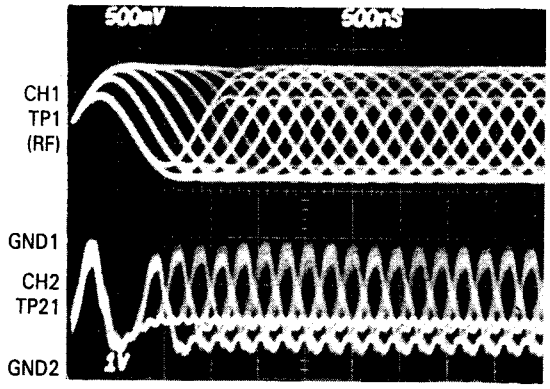
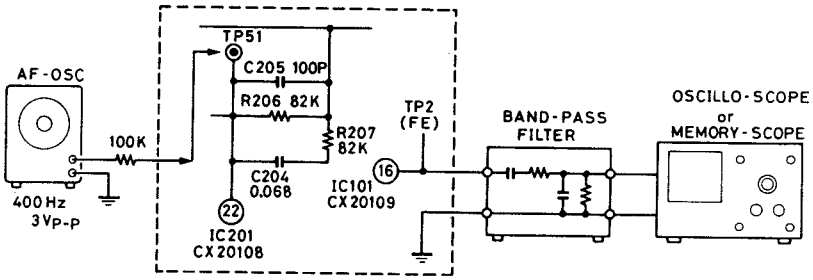


Fig. 3.

Focus gain adjustment

Test disc ; YEDS 18 (Sony)
Measuring equipment ; Memory scope; oscilloscope
Connection point ; TP - 2 (FE-SIGNAL)
Adjustment point ; SVR - 201
Adjustment value ; 400mV P - P

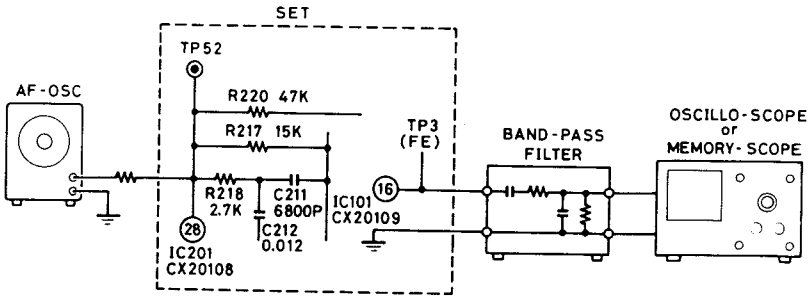
a Play the test disc.
b Connect the audio signal generator to TP51 [pin 22 of IC201 (CX20108)] via a 100 kohm resistor.
c Connect the oscilloscope or memory scope to TP2 via the band-pass filter and observe the output.
d Set the output of the audio signal generator to 400 Hz 3 VP-p (1.1 Vrms).
e Adjust SVR201 so that the output waveform on the memory scope becomes 400 mVp-p.



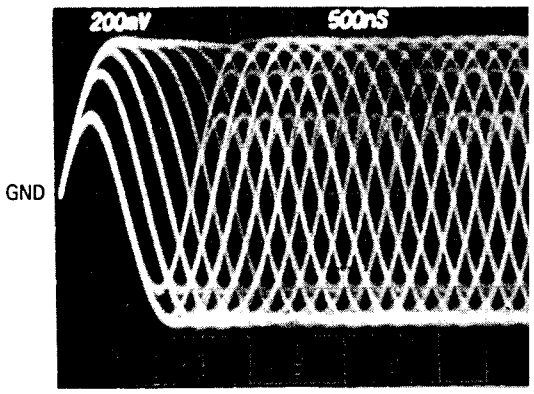
Tracking gain adjustment

Test disc ; YEDS 18 (Sony)
Measuring equipment ; Memory scope
Connection point ; TP - 3 (TE-SIGNAL)
Adjustment point ; SVR - 202
Adjustment value ; 1.2V P - P

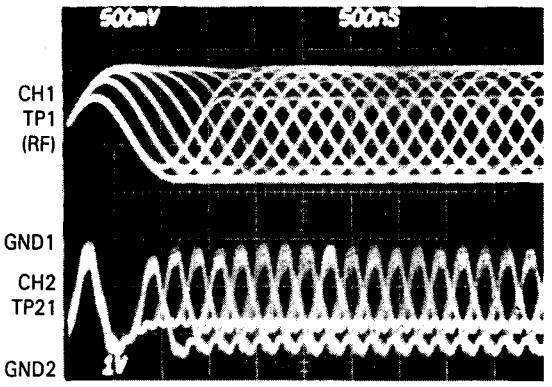
a Play the test disc.
b Connect the audio signal generator to TP52 [pin 28 of IC201 (CX20108)] via a 470 kohm resistor.
c Connect the oscilloscope or memory scope to TP3 (tracking error signal) via the band-pass filter and observe the output.
d Set the output of the audio signal generator to 400 Hz 3 Vp–p (1.1 Vrms).
e Adjust SVR202 so that the output waveform on the memory scope becomes 1.2 Vp–p.



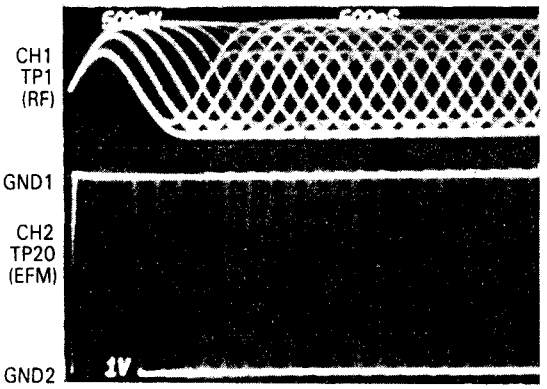
(1) TP1(RF) MODE:PLAY
V:200mV/div (AC Coup.) H:500nsec/div



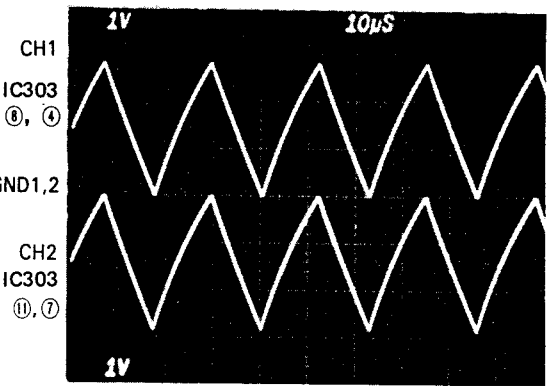
(2) TP1,TP21 MODE:PLAY
CH1 V:500mV/div H:500nsec/div
CH2 V:1V/div H:500nsec/div



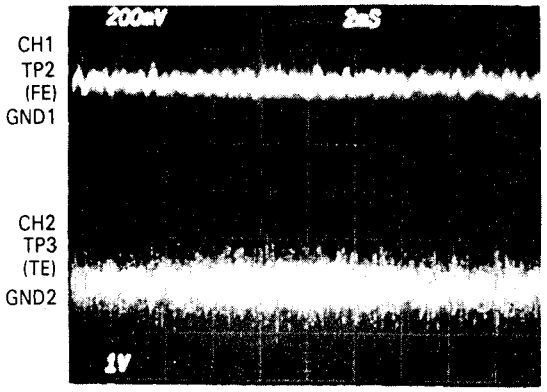
(3) TP1,TP20 MODE:PLAY
CH1 V500mV/div H:500nsec/div
CH2 V:1V/div H:500nsec/div



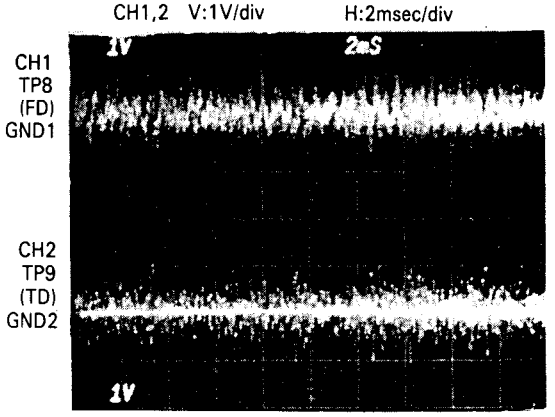
(4) IC303 ⑧④ & ⑪⑦ MODE:PLAY
(PWM Carrier)
CH1,2 V:1V/div H:10μsec/div



(5) TP2(FE),TD3(TE) MODE:PLAY
CH1 V:200mV/div H:2msec/div
CH2 V:1V/div H:2msec/div

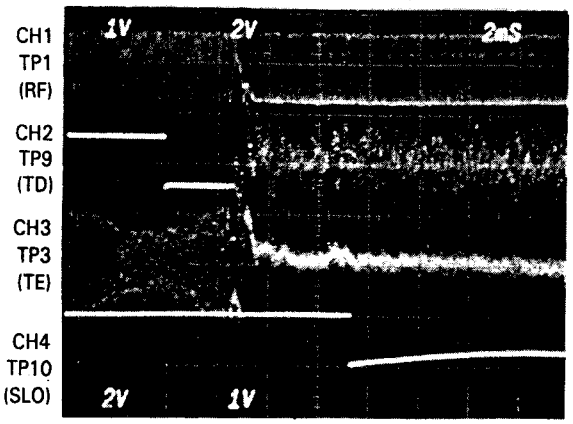


(6) TP8(FD),TP9(TD) MODE:PLAY
CH1,2 V:1V/div H:2msec/div

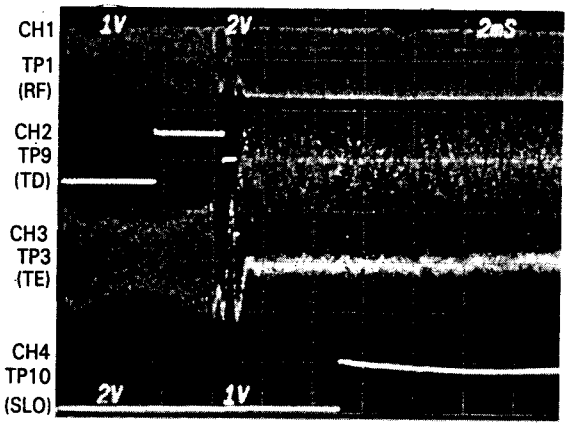


NORMAL WAVE FORM OF TEST POINT

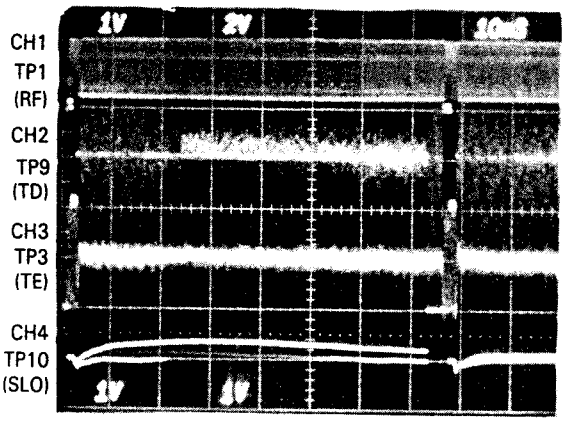
(7) TP1,TP9,TP3TP10 MODE:FWD SKIP
(TRIGGER by TP-3)
CH1,4 V:1V/din H:2msec/div
CH2,3 V:2V/div H:2msec/div



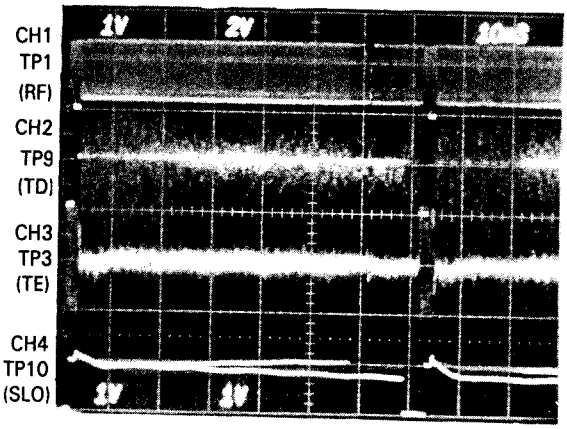
(8) TP1,TP9,TP3,TP10 MODE:BACK SKIP
(TRIGGER by TP-3)
CH1,4 V:1V/div H:2msec/div
CH2,3 V:2V/div H:2msec/div



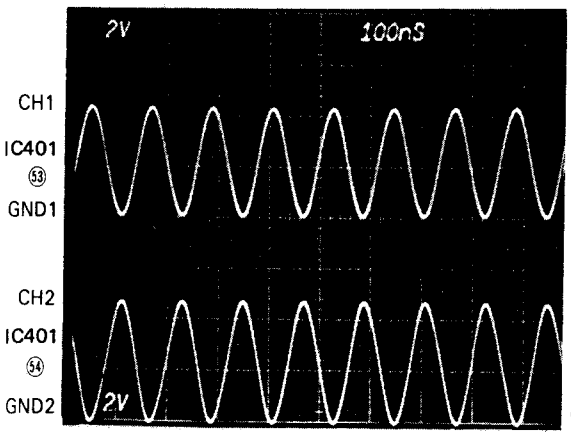
(9) TP1,TP9,TP3,TP10 MODE:FWD SEARCH
(TRIGGER by TP-3)
CH1,2,4 V:1V/div H:10msec/div
CH3 V:2V/div H:10msec/div



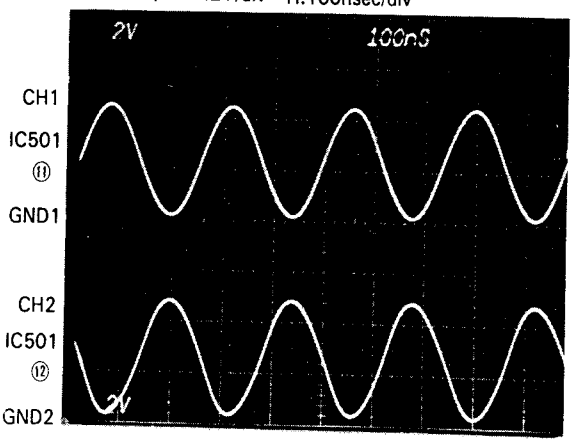
(10) TP1,TP9,TP3,TP10 MODE:BACK SEARCH
(TRIGGER by TP-3)
CH1,2,4 V:1V/div H:10msec/div
CH3 V:2V/div H:10msec/div



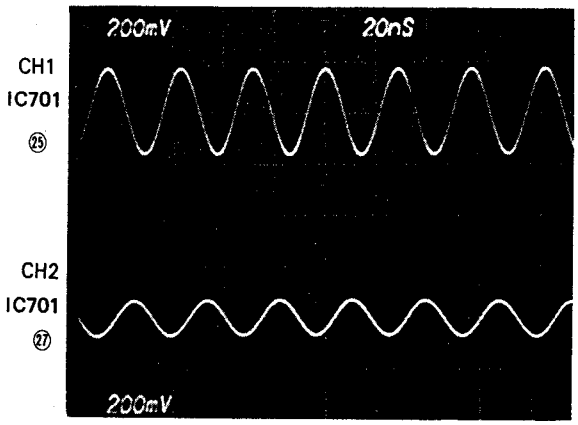
(11) IC401 ⑤③, ⑤④ MODE:PLAY
CH1,2 V:2V/div H:100nsec/div



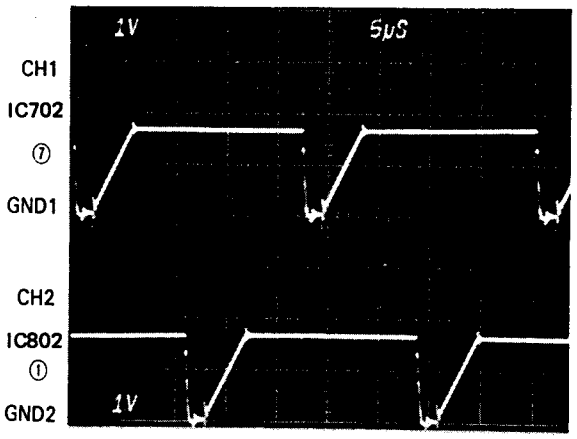
(12) IC501⑪, ⑫ MODE:PLAY
CH1,2 V:2V/div H:100nsec/div



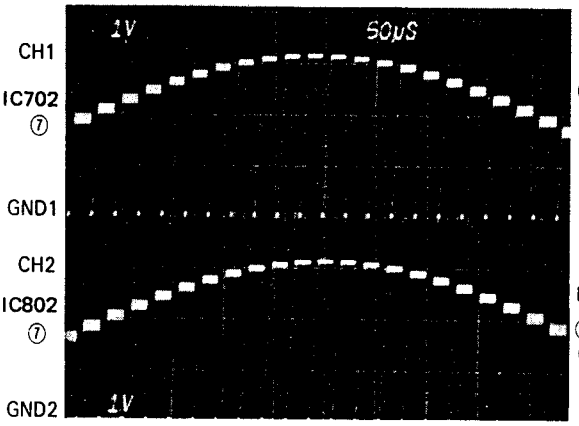
(13) IC701 ㉕, ㉗ MODE:PLAY
CH1,2 V:200mV/div(AC) H:20nsec/div



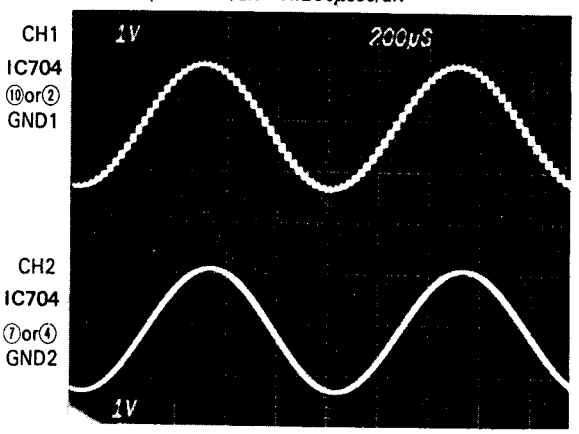
(14) IC702 ⑦, IC802 ① MODE:PLAY
(DAC INTEGRAL DETECTOR OUTPUT) (DIGITAL−∞)
CH1,2 V:1V/div H:5μsec/div



(15) IC702 ⑦, IC802 ① MODE:PLAY
(DAC INTEGRAL DETECTOR OUTPUT) (1KHz 0dB)
CH1,2 V:1V/div H:50μsec/div

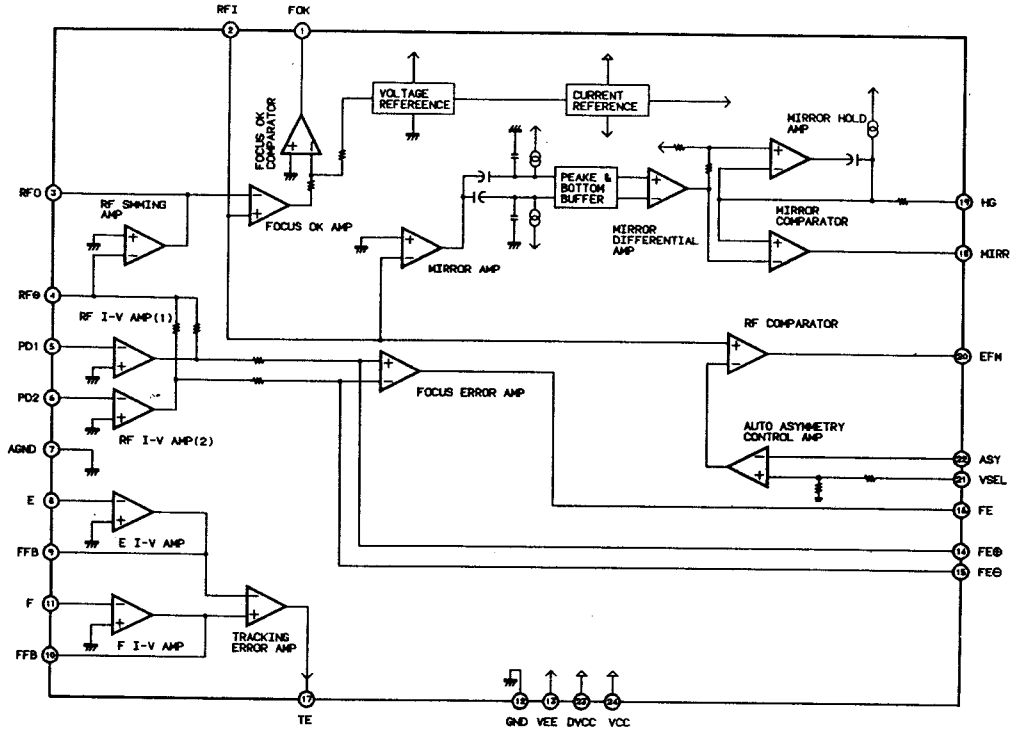


(16) IC704 ⑩or②, ⑦or④ MODE:PLAY
(LPF INPUT, OUTPUT) (1KHz 0dB)
CH1,2 V:1V/div H:200μsec/div



IC BLOCK DIAGRAM

IC101 CX20109 RF AMP

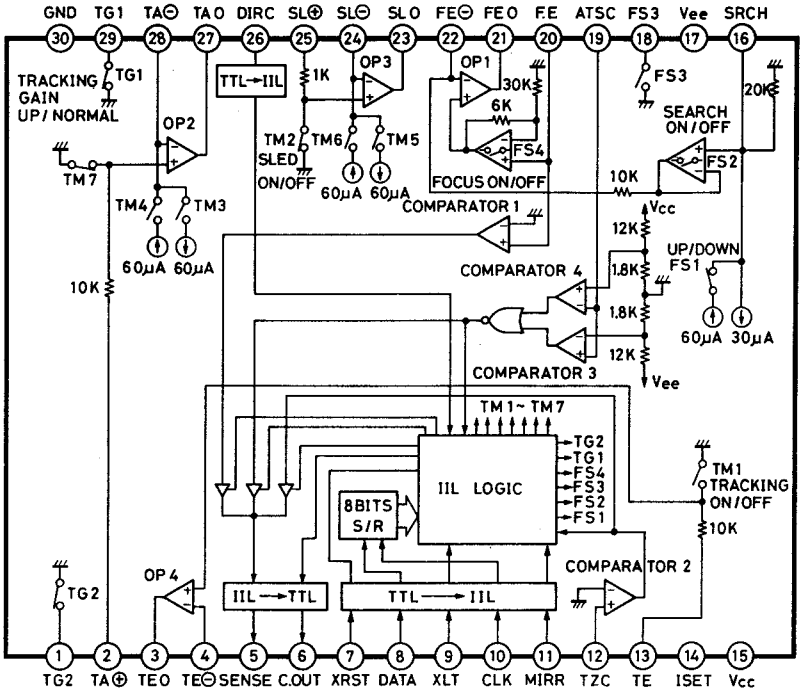


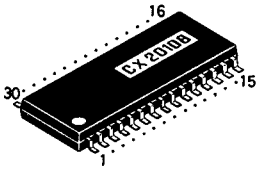
Pin No.	Pin name	I/O	Function	DC Volt	Pin No.	Pin name	I/O	Function	DC Volt
1	FOK	O	Output to enable focus servo operation. It is active with comparator output set at High level. Load resistor connection (PNP open collector).	0V	9	EFB	O	Output of E 1-V amplifier. Feedback CR connection between pins (8) and (9).	0V
2	RFI	I	Output of RF summing amplifier is here input through C coupling.	0V	10	FFB	O	Output of F 1-V amplifier. Feedback CR connection between pins (10) and (11).	0V
3	RFO	O	Output of RF summing amplifier. Eye pattern test point.	V RFO	11	F	I	Inverted input of F 1-V amplifier. Current input in connection with PIN diode f.	0V
4	RF (−)	I	Inverted input of RF summing amplifier. Feedback CR connection between pins (3) and (4).	0V	12	GND	−	Ground.	0V
5	PD1	I	Inverted input of RF 1-V amplifier (1). Current input in connection with PIN diode B+D.	0V	13	VEE	−	Negative power supply.	−5V
6	PD2	I	Inverted input of RF1-V amplifier (2). Current input in connection with PIN diode A+C.	0V	14	FE (+)	I	Non-inverted input of focus error amplifier. CR connection for low pass filter.	0V
7	AGND	−	Ground for minor signal analog system.	0V	15	FE (−)	I	Inverted input of focus error amplifier.	0V
8	E	I	Inverted input of E 1-V amplifier. Current input in connection with PIN diode E.	0V	16	FE	O	Output of focus error amplifier. Feedback CR connection between pins (15) and (16).	V FEO
					17	TE	O	Output of tracking error amplifier.	V TEO
					18	MIRR	O	Output of mirror comparator active at High level). Load resistor connection (PNP open collector).	0V
					19	HC	I	Connection pin for mirror hold capacitor.	−2V

IC BLOCK DIAGRAM

Pin No.	Pin name	I/O	Function	DC Volt	Pin No.	Pin name	I/O	Function	DC Volt
20	EFM	O	Output of EFM comparator (voltage measured at open state).	4.1V	22	ASY	I	Input of auto asymmetry control amplifier.	–
21	VSEL	I	Reference input level setting pin for auto asymmetry control amplifier. Vcc with ±5V power, GND with +10V power.	+5V	23	DVcc	–	Positive power supply for EFM comparator.	+5V
					24	Vcc	–	Positive power supply	+5V

IC201 CX20108 SERVO SIGNAL PROCESSOR



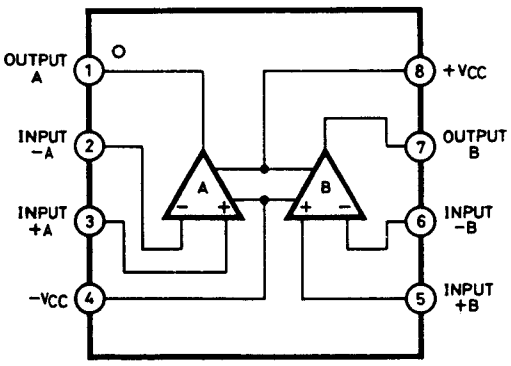


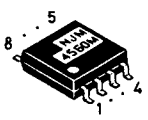
Pin No.	Pin name	I/O	Function	Pin No.	Pin name	I/O	Function
1	TG2	–	Gain selection pin of tracking amplifier. It is opened or set at ground level.	8	DATA	I	Serial data transfer of CPU → SSP. This signal is input from LSB. D0 – D7.
2	TA (+)	–	Non-inverted input of operational amplifier 2.	9	XLT	I	Serial data latch of CPU → SSP. When this signal is at Low level, the contents of internal serial shift register are transferred to the respective addressdecoded latches. After the transfer, it is needed to return it to High level as there arises no trigger signal.
3	TE	–	Output of operational amplifier 4.				
4	TE (–)	–	Inverted input of operational amplifier 4.				
5	SENSE	O	Output of SSP internal state in accordance with CPU → SSP addresses. (The output varies depending upon the address contents of internal serial register.)	10	CLK	I	Serial data transfer clock for CPU → SSP. Data entry is allowed at the falling edge of this signal. Before or after the transfer, it is needed to set the signal at High level.
6	C. OUT	O	Output for track number counting at the time of high speed accessing.				
7	XRST	I	All the contents of internal register are cleared with CPU → SSP set at Low level. This signal is connected to CPU reset pin.	11	MIRR	I	Mirror signal input from RF amplifier.

IC BLOCK DIAGRAM

Pin No.	Pin name	I/O	Function
12	TZC	—	Tracking error signal is here input through C coupling. Time constant is decided by 1-track jump (usually set at about 2 kHz).
13	TE	—	Tracking error input signal.
14	ISET	—	Amperage setting pin to decide focus search voltage, tracking jump voltage and sled forward voltage.
15	Vcc	—	Power supply pin (usually +5V).
16	SRCH	—	Connected to capacitor which decides the time constant for charge/discharge waveform of focus search operation.
17	VEE	—	Power supply pin (usually −5V).
18	FS3	—	Gain selection pin of focus amplifier. It is opened or set at ground level.
19	ATSC	—	If the player is exposed to some mechanical shock, its information is here input. This is enabled simply by application of tracking error signal through band pass filter. If this pin is not used, it must be connected to ground.
20	FE	—	Focus error signal input.
21	FEO	—	Output of operational amplifier 1.
22	FE (−)	—	Inverted input of operational amplifier 1.
23	SLO	—	Output of operational amplifier 3.
24	SL (−)	—	Inverted input of operational amplifier 3.
25	SL (+)	—	Non-inverted input of operational amplifier 3.
26	DIRC	I	This signal is used during 1-track jump operation and is usually set at High level. When it is at Low level, it reverses the direction of track jump pulse. When it is next set at High level, the unit gets in normal tracking mode. It is kept at Low level for a certain time with detection of the rising and folling edges of TZC signal.
27	TAO	—	Output of operational amplifier 2.
28	TA (−)	—	Inverted input of operational amplifier 2.
29	TG1	—	Gain selection pin of tracking amplifier. It is opened or set at ground level.
30	GND	—	Ground of IC.

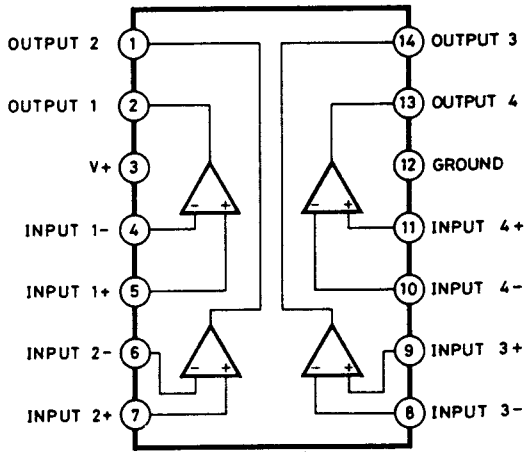
IC301,705 NJM4560M
IC302 NJM4558M
IC403 NJM082BM
IC502 NJM2903M

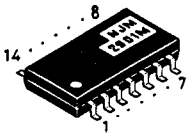




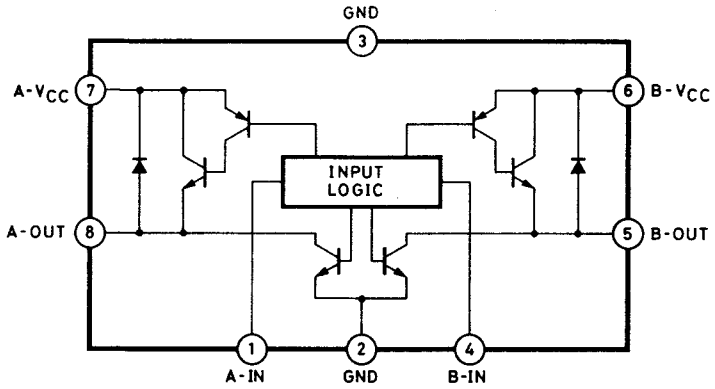
IC702,802 NJM072M or M5238FP
IC932 LA6358

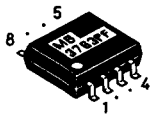
IC303 NJM2901M
QUAD COMPARATOR





IC 304,305 MB3763PF
BI-DIRECTIONAL MOTOR DRIVER

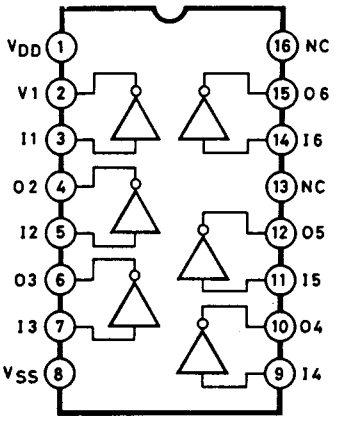


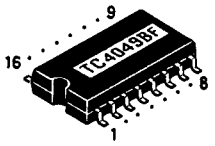


INPUT MODE		OUTPUT LEVEL		OUTPUT ACTUATE MODE
A-IN	B-IN	A-OUT	B-OUT	
1	1	L	L	SHORT (BRAKE)
1	0	L	H	FORWARD
0	1	H	L	REVERSE
0	0	–	–	OPEN

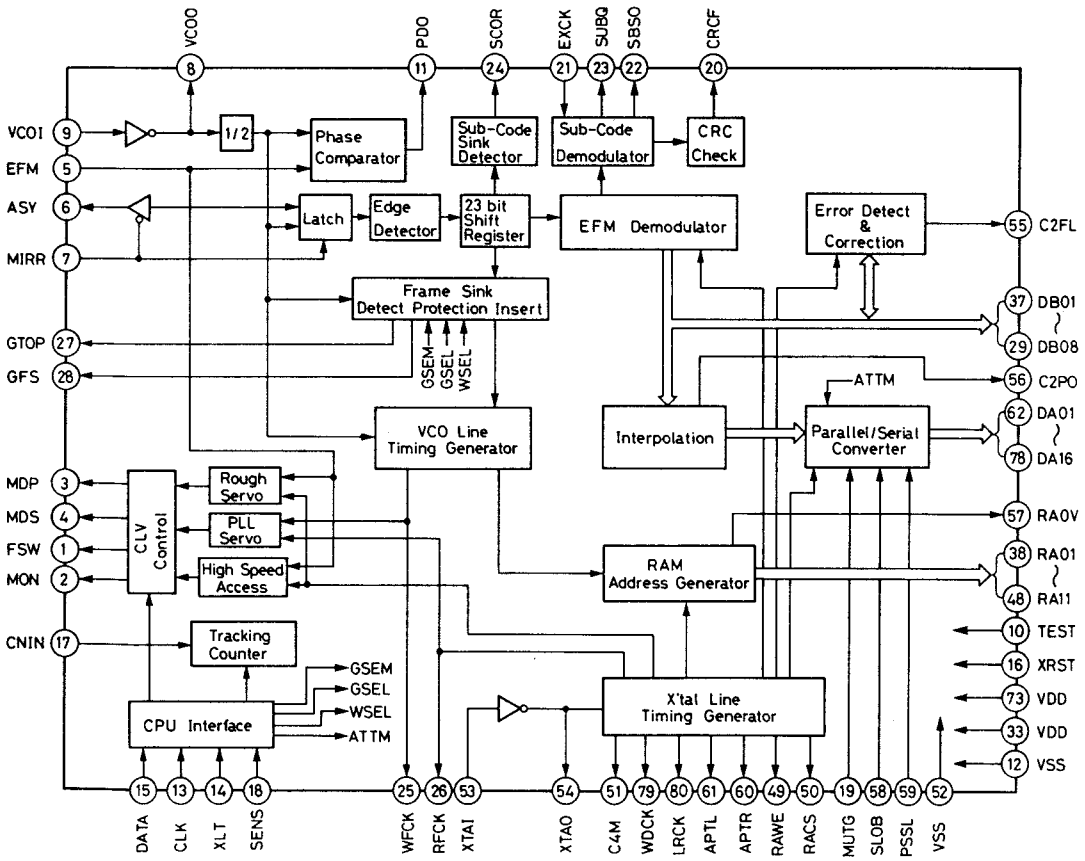
INPUT MODE 1 ; 0.24V more
0 ; 0.4V less

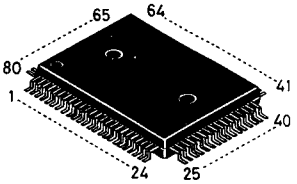
IC306 TC4049BP
HEXAGON BUFFER/CONVERTER





IC401 CX23035
DIGITAL SIGNAL PROCESSOR





IC BLOCK DIAGRAM

Pin No.	Pin name	I/O	Function
1	FSW	O	Time constant switching output for spindle motor output filter.
2	MON	O	ON/OFF control output for spindle motor.
3	MDP	O	Spindle motor drive output. Rough control for CLV–S mode and phase control for CLV–P mode.
4	MDS	O	Drive output for spindle motor. Speed control for CLV–P mode.
5	EFM	I	EFM signal input from RF amplifier.
6	ASY	O	Output for controlling slice level of EFM signal.
7	MIRR	I	MIRROR input from RF amplifier.
8	VCOO	O	VCO output. When output is locked to EFM signal, f=8.6436 MHz
9	VCP1	I	VCO input.
10	TEST	I	(0V)
11	PDO	O	Phase comparison output between EFM signal and VCO/2.
12	VSS	–	GND (0V)
13	CLK	I	Serial data transfer clock input from CPU. Data is latched at rising edge of clock.
14	XLT	I	Latch input from CPU. Data in 8–bit shift register (serial data from CPU) is latched in each register.
15	DATA	I	Serial data input from CPU.
16	XRST	I	System reset input. The system is reset when the signal is at LOW level.
17	CNIN	I	Tracking pulse input.
18	SENS	O	Outputs internal status corresponding to address.
19	MUTG	I	Muting input. When ATTM of internal register A is at LOW level, MUTG is at LOW level, and player is in a normal condition. When these statuses are HIGH level, no sound is output.
20	CRCF	O	Outputs result of CRC check of sub-cord Q.
21	EXCK	I	Clock input for serially outputting sub-code.
22	SBSO	O	Serial output of sub-code.
23	SUBQ	O	Sub-code Q output.
24	SCOR	O	Sub-code sync S0 + S1 output.
25	WFCK	O	Write Frame Clock output. When frame sync is locked, f =7.35 kHz.
26	RFCK	O	Read Frame Clock output. 7.35 kHz from X'tal oscillator.
27	GTOP	O	Display output of frame sync protection status.
28	GFS	O	Display output of frame sync lock status.
29	DB08	I/O	Data pin of external RAM. DATA 8 (MSB)
30	DB07	I/O	Data pin of external RAM. DATA 7
31	DB06	I/O	Data pin of external RAM. DATA 6
32	DB05	I/O	Data pin of external RAM. DATA 5
33	VDD	–	Power supply (+5 V)
34	DB04	I/O	Data pin of external RAM. DATA 4
35	DB03	I/O	Data pin of external RAM. DATA 3
36	DB02	I/O	Data pin of external RAM. DATA 2
37	DB01	I/O	Data pin of external RAM. DATA 1 (LSB)
38	RA01	O	Address output of external RAM. ADDR01 (LSB)
39	RA02	O	Address output of external RAM. ADDR02
40	RA03	O	Address output of external RAM. ADDR03
41	RA04	O	Address output of external RAM. ADDR04
42	RA05	O	Address output of external RAM. ADDR05
43	RA06	O	Address output of external RAM. ADDR06
44	RA07	O	Address output of external RAM. ADDR07
45	RA08	O	Address output of external RAM. ADDR08
46	RA09	O	Address output of external RAM. ADDR09
47	RA10	O	Address output of external RAM. ADDR010
48	RA11	O	Address output of external RAM. ADDR011 (MSB)
49	RAWE	O	Write Enable signal output to external RAM. (active at LOW level).
50	RACS	O	Chip Select signal output to external RAM. (active at LOW level)
51	C4M	O	1/2 frequency-divided output of X'tal. f=5.2336 MHz
52	Vss	–	GND (0V)
53	XTA1	I	X'tal oscillator circuit input. f=8.4672 MHz
54	XTAP	O	X'tal oscillator circuit output. f=8.4762 MHz
55	C2FL	O	Correction status output. Becomes NNH" when C2 system presently being corrected cannot be corrected.
56	C2PO	O	Display output of C2 pointer. Synchronized with audio output.
57	RAOV	O	Display output of overflow and under-flow of±4 frame jitter absorbing RAM.
58	SLOB	I	Code switching input of audio data output. It is complement output at LOW level and offset binary output at HIGH level.
59	PSSL	I	Mode switching input of audio data output. It is serial output at LOW level and paralllel output at HIGH level.

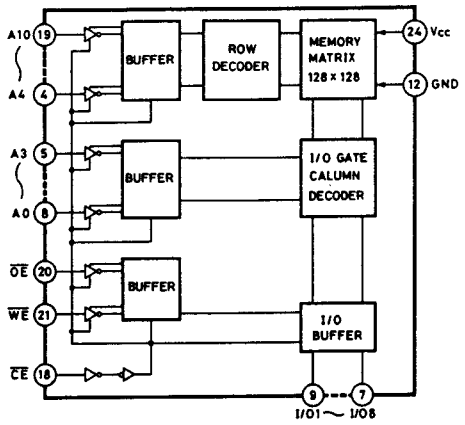
IC BLOCK DIAGRAM

Pin No.	Pin name	I/O	Function
60	APTR	O	Aperture compensation control output. It is HIGH level for R–channel correction.
61	APTL	O	Aperture compensation control output. It is at HIGH level L–channel correction.
62	DA01	O	DA01 (LSB of parallel audio data) is output when PSSL is at HIGH level. C1F1 is output when PSSL is at LOW level.
63	DA02	O	DA02 is output when PSSL is at HIGH level. C1F2 is output when PSSL is at LOW level.
64	DA03	O	DA03 is output when PSSL is at HIGH level. 2F1 is output when PSSL is at LOW level.
65	DA04	O	DA04 is output when PSSL is at HIGH level. C2F2 is output when PSSL is at LOW level.
66	DA05	O	DA05 output when PSSL is at HIGH level. UGFS is output when PSSL is at LOW level.
67	DA06	O	DA06 output when PSSL is at HIGH level. WFCK is output when PSSL is at LOW level.
68	DA07	O	DA07 output when PSSL is at HIGH level. FCKV is output when PSSL is at LOW level.
69	DA08	O	DA08 output when PSSL is at HIGH level. FCKX is output when PSSL is at LOW level.
70	DA09	O	DA10 output when PSSL is at HIGH level. PLCK is output when PSSL is at LOW level.
71	DA10	O	DA10 output when PSSL is at HIGH level. LRCK is output when PSSL is at LOW level.
72	DA11	O	DA11 output when PSSL is at HIGH level. C4LR is output when PSSL is at LOW level.
73	VDD	–	Power supply (+5 V)
74	DA12	O	DA12 output when PSSL is at HIGH level. DENL is output when PSSL is at LOW level.
75	DA13	O	DA13 output when PSSL is at HIGH level. DENR is output when PSSL is at LOW level.
76	DA14	O	DA14 output when PSSL is at HIGH level. C210 is output when PSSL is at LOW level.
77	DA15	O	DA15 output when PSSL is at HIGH level. C210 is output when PSSL is at LOW level.
78	DA16	O	DA16 (parallel audio data MSB) output when PSSL is at HIGH level. DATA output when PSSL is at LOW level.
79	WDCK	O	88.2 kHz strobe signal output.
80	LRCK	O	44.1 kHz strobe signal output.

Note:

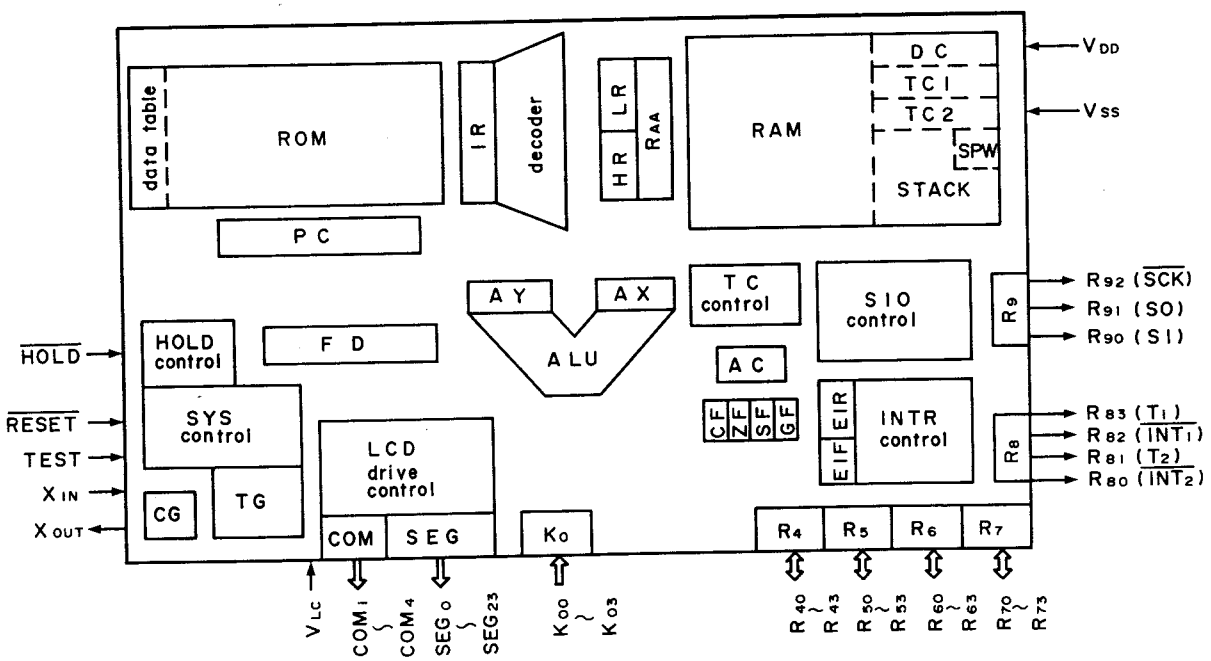
I/O:	Input/Output
C1F1 & C2F2:	Monitor output of error correction status during C1 decoding.
C2F1 & C2F2:	Monitor output of error correction status during C2 decoding.
UGFS:	Output of non-protected frame sync pattern.
WFCK:	Inverting output of WFCK.
FCKV:	Outputs WFCK/4 or WFCK/8.
FCKX:	Outputs RFCK/4 or RFCK/8.
PLCK:	VCO/2 output. When output locks onto EFM signal, f=4.3218 MHz
C4LR:	176.4 kHz strobe signal.
DENL/DENR:	Enable signal of serial data of L–ch. Enable signal of serial data of R–ch.
C210/C210:	Bit clock output. f=2.1168 MHz. Inverted signal of /C210.
DATA:	Serial data output of audio signal.

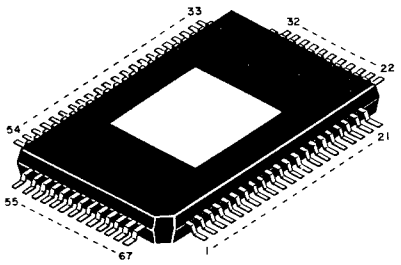
IC402 CXK5816M-15L STATIC RAM (2K WORD X 8BIT HIGH SPEED C-MOS)



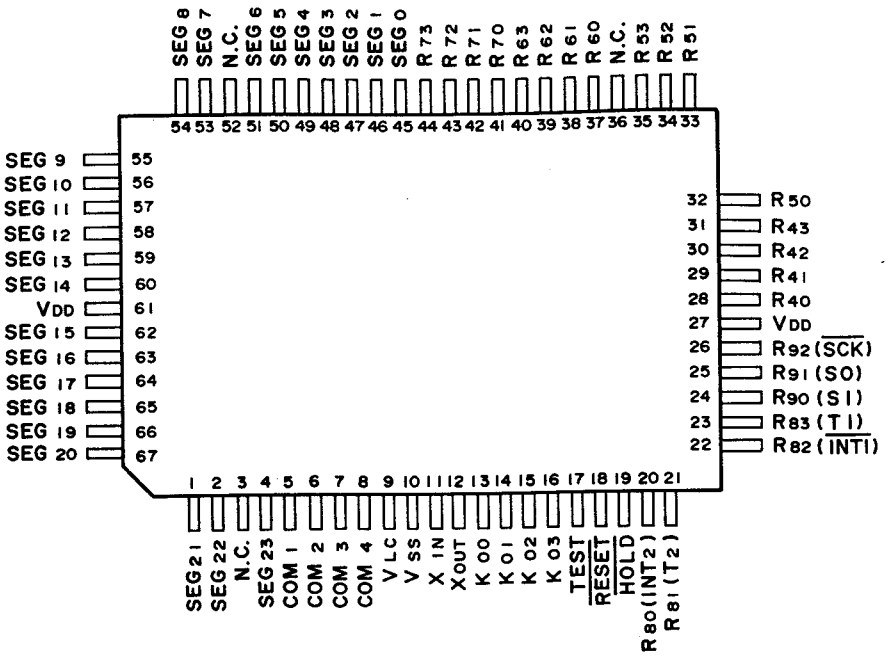
Pin No.	Pin name	I/O	Function
1 ~ 8	A7 ~ A0	I	Address input
19.22.23	A10.A9.A8	I	Address input
21	R/W	I	Read/write input
18.20	CE2.CE1	I	Chip enable input
9 ~ 11	I/O1 ~ I/O3	I/O	Data input/output
13 ~ 17	I/O4 ~ I/O8	I/O	Data input/output
24	V DD	–	(+5V)
12	GND	–	(GND)

IC501 TMP47C420AF-8172Z or 8173Z MICRO COMPUTER





IC BLOCK DIAGRAM



Block Name	Function	Block Name	Function
PC	Program counter (12 bit)	K, R	Input/output port
ROM	Program memory (including fixed date area)	INTR control	Interrupt control (EIF: Interrupt permission master F/F, EIR: Interrupt permission resister)
IR, decorder	Instruction resister, decoder		
HR, LR	H resister (RAM page specification), L sister (address specification within RAM page) 4 bits each	FD	Divider (4 stage prescaler + 18 stages)
		TC1, TC2	2 bit timer/counter 2 channel (RAM area)
RAA	RAM address buffer resister (8 bit)		
RAM	Data memory	TC control	Timer/counter control
STACK	Program counter and flag save area (RAM area)	SIO control	4 bit buffered serial port control
		LCD drive control	LCD drive circuit
SPW	Stack pointer word (RAM area)	HOLD control	Hold function control
DC, data table	Data counter (12 bit, RAM area), data table (RAM area)	SYS control	Generation of various internal control signals
AX, AY	ALU input temporary resister		
ALU	Arithmetic logic circuit	CG, TG	Generator circuit, timing generator
AC	Accumulator		
FLAG (CF,ZF,SF,GF)	Flag		

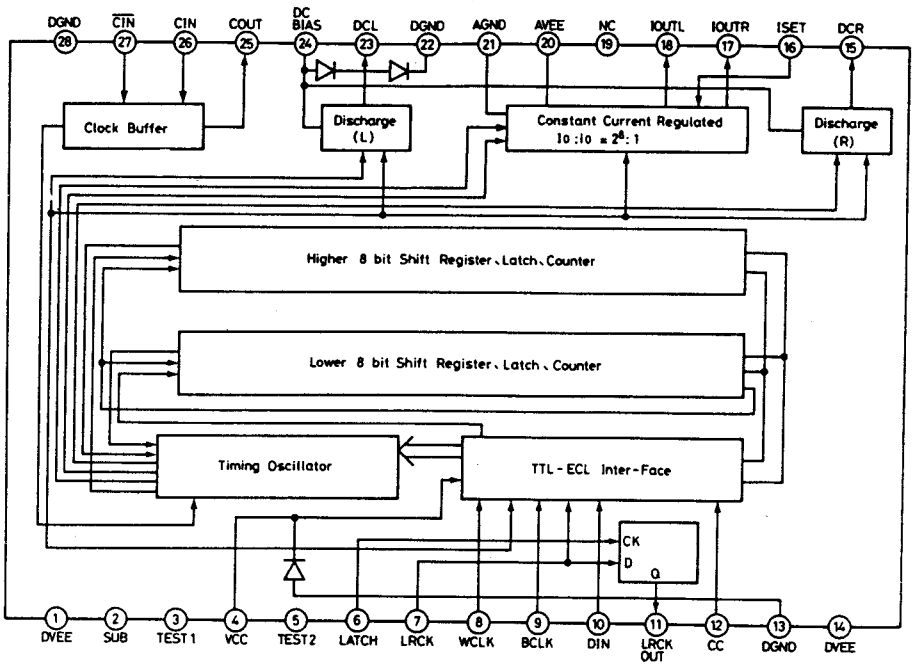
IC BLOCK DIAGRAM

Pin No.	Pin name	I/O	Function	Assigned Function	Basic Function
1	SEG21	–	SEG21	N. C	LCD segment driver output
2	SEG22	–	SEG22	N. C	LCD segment driver output
3	NC	–	N. C	N. C	
4	SEG23	–	SEG23	N. C	LCD segment driver output
5	COM1	0	COM1	LCD common driver output	LCD common driver output
6	COM2	0	COM2	LCD common driver output	LCD common driver output
7	COM3	0	COM3	LCD common driver output	LCD common driver output
8	COM4	0	COM4	LCD common driver output	LCD common driver output
9	VLC	VLC	VLC	LCD drive power supply	LCD drive power supply
10	VSS	VSS	VSS	Power supply OV	OV
11	XIN	I	XIN	X'tal connecting pin	X'tal connecting pin
12	XOUT	0	XOUT	X'tal connecting pin	X'tal connecting pin
13	K00	I	FF	FWD ACCESS/SEARCH KEY input	Input port
14	K01	I	FB	FWD ACCESS/SEARCH KEY input	Input port
15	K02	I	PLAY/PAUSE	PLAY/PAUSE KEY input	Input portion
16	K03	I	MEMO/REMAIN	MEMORY/REMAIN KEY input	Input port
17	TEST	I	N. C	GND	(Low level is input.)
18	RESET	I	RESET	Rest	Initialize signal input
19	HOLD	I	HOLD	Hold input	Hold signal input
20	R80 (INT2)	0	XRST	XRST signal (IC201-7 and IC401-16)	Input/output port of interrupt input
21	R81 (T2)	I	FOK	Focus OK signal input (IC101-1)	Input/output port or timer/counter input
22	R82 (INT1)	I	SCOR	SCOR signal input (IC401-24)	Input/output port or interrupt input
23	R83 (T1)	I	CRCF	CRC OK signal (IC401-20)	Input/output port or timer/counter input
24	R90 (S1)	I	SUBQ	SUBQ data input port	Input/output portion or serial input
25	R91 (S0)	I	SENS	Sense (IC201-5, IC401-18)	Input/output port or serial output
26	R92 (SCK)	I	WFCK	WFCK signal (IC401-25)	For input/output port or serial port
27	VDD	VDD	VDD	Power supply +5 V	Power supply +5 V
28	R40	O	P-CONTL	Power control signal output	InputYoutput port
29	R41	O	DRIVE EN	Drive end signal output	Input/output port
30	R42	O	MUTING	Muting signal output	Input/output port
31	R43	O	DEMP	Emphasis signal input	Input/output port
32	R50	I	STOP	Stop key input	Input/output port
33	R51	I	MODE	Mode key input	Input/output port
34	R52	I	REPEAT	Repeat key input	Input/output port
35	R53	I	OPEN/CLOSE	OPEN/CLOSE key input	Input/output port
36	NC	–	N. C	N. C	
37	R60	O	CLK	Clock (IC201-10, IC401-13)	Input/output port
38	R61	O	XLT	Latch signal (IC201-9, IC401-14)	Input/output port
39	R62	O	DATA	Data signal (IC201-8, IC401-15)	Input/output port
40	R63	O	DIRC	Direct signal	Input/output port
41	R70	O	N. C.	(GND)	Input/output port
42	R71	I	BATT-E	Battery empty signal input	Input/output port
43	R72	I	BATT-W	Battery warning signal input	Input/output port
44	R73	I	LIMIT-SW	Limit switch signal input	Input/output port
45	SEG 0	O	SEG 0	LCD–segment driver output	LCD segment driver output
46	SEG 1	O	SEG 1	LCD–segment driver output	LCD segment driver output
47	SEG 2	O	SEG 3	LCD–segment driver output	LCD segment driver output
48	SEG 3	O	SEG 3	LCD–segment driver output	LCD segment driver output
49	SEG 4	O	SEG 4	LCD–segment driver output	LCD segment driver output
50	SEG 5	O	SEG 5	LCD–segment driver output	LCD segment driver output
51	SEG 6	O	SEG 6	LCD–segment driver output	LCD segment driver output
52	NC	–	N. C	N. C	
53	SEG 7	O	SEG 7	LCD–segment driver output	LCD segment driver output

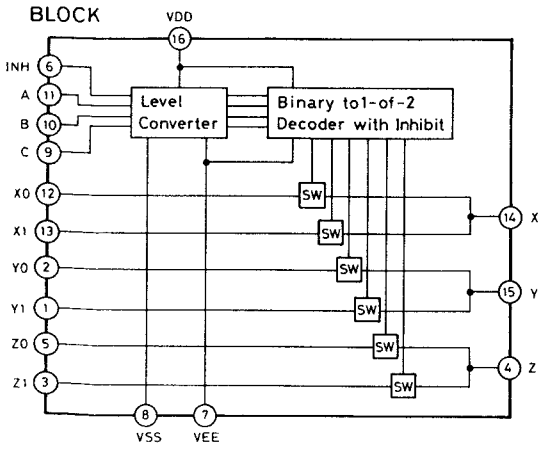
IC BLOCK DIAGRAM

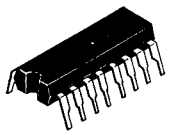
Pin No.	Pin name	I/O	Function	Assigned Function	Basic Function
54	SEG 8	O	SEG 8	LCD–segment driver output	LCD segment driver output
55	SEG 9	O	SEG 9	LCD–segment driver output	LCD segment driver output
56	SEG 10	O	SEG 10	LCD–segment driver output	LCD segment driver output
57	SEG 11	O	SEG 11	LCD–segment driver output	LCD segment driver output
58	SEG 12	O	SEG 12	LCD–segment driver output	LCD segment driver output
59	SEG 13	O	SEG 13	LCD–segment driver output	LCD segment driver output
60	SEG 14	O	SEG 14	LCD–segment driver output	LCD segment driver output
61	VDD	O	VDD	Power supply +5 V	Power supply +5 V
62	SEG 15	O	SEG 15	LCD–segment driver output	LCD segment driver output
63	SEG 16	O	SEG 16	LCD–segment driver output	LCD segment driver output
64	SEG 17	O	SEG 17	LCD–segment driver output	LCD segment driver output
65	SEG 18	O	SEG 18	N. C	LCD segment driver output
66	SEG 19	O	SEG 19	N. C	LCD segment driver output
67	SEG 20	O	SEG 20	N. C	LCD segment driver output

IC701 CX20133
16 BIT D/A CONVERTER



IC703 μPD4053BG
TRIPLE 2 CHANEL
MULTIPLEXER/DEMOLTIPLEXER



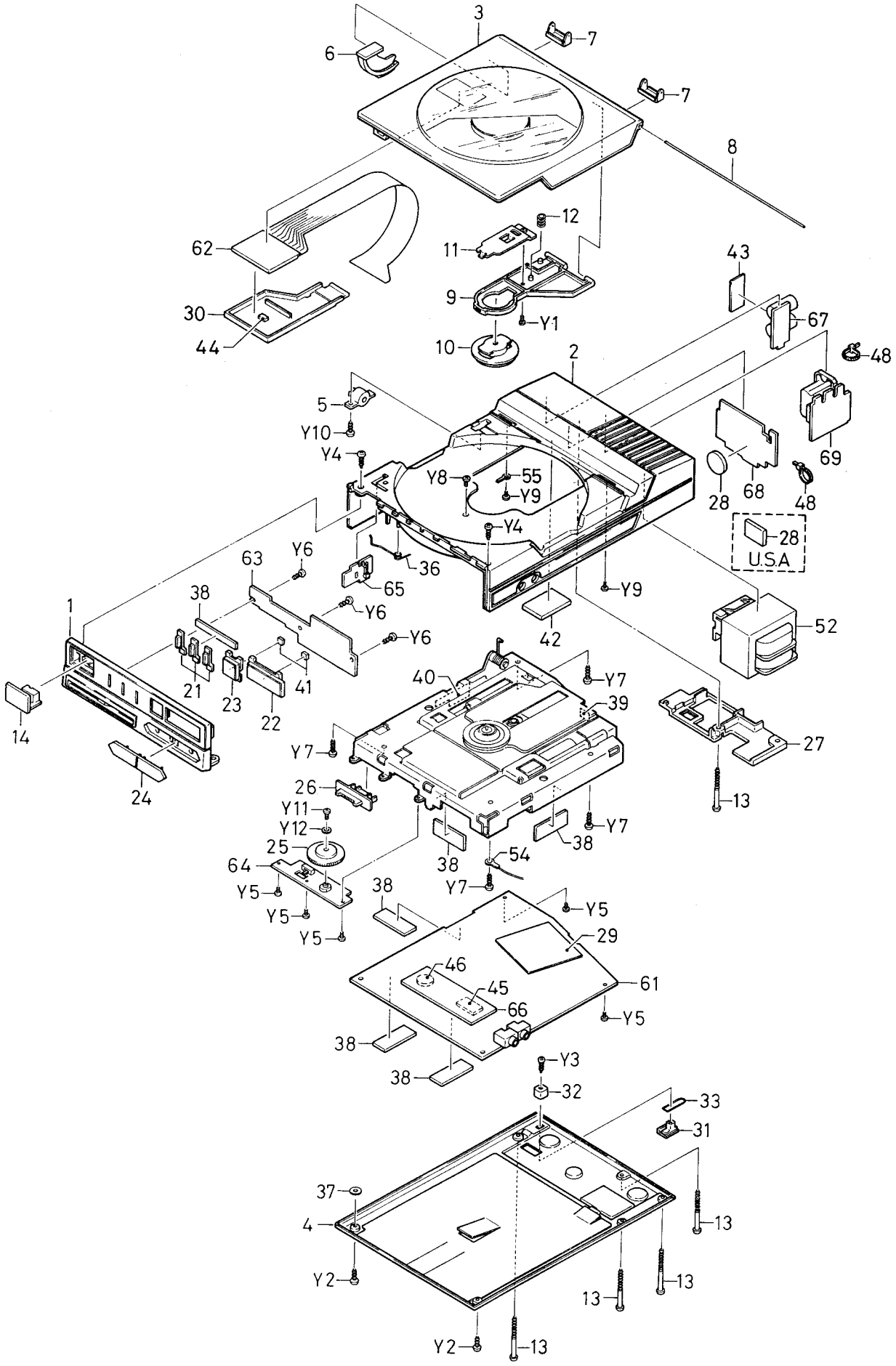


TRUTH VALUE TABLE

Control Input				"ON" Channel
INHIBIT	C	B	A	
L	L	L	L	Z0. Y0. X0
L	L	L	H	Z0. Y0. X1
L	L	H	L	Z0. Y1. X0
L	L	H	H	Z0. Y1. X1
L	H	L	L	Z1. Y0. X0
L	H	L	H	Z1. Y0. X1
L	H	H	L	Z1. Y1. X0
L	H	H	H	Z1. Y1. X1
H	X	X	X	NONE

H: High Level
L: Low Level
X: H or L

EXPLODED VIEW (CABINET)



PARTS LIST

PRODUCT SAFETY NOTICE

Each precaution in this manual should be followed during servicing. Components identified with the IEC symbol ⚠ in the parts list and the schematic diagram designate components in which safety can be of special significance. When replacing a component identified with ⚠, use only the replacement parts designated, or parts with the same ratings of resistance, wattage or voltage that are designated in the parts list in this manual.
Leakage-current or resistance measurements must be made to determine that exposed parts are acceptably insulated from the supply circuit before returning the product to the customer.

NOTE:

* Materials of Capacitors and Resistors are abbreviated as follows;

AL ELECT .....Aluminum Electrolytic
BC CON.....Semiconductor Ceramic
CHIP BC .....Chip Semiconductor Ceramic
CHIP TAN.....Chip Tantal
ELECT .....Electrolytic
PP CON.....Polypropylene
MT GLAZE.....Metal Glaze
FP CARBON.....Flameproof Carbon

This model has six kind version.

* Tolerance of Capacitors and Resistors are noted with follow symboles;

J .....±5%
K.....±10%
M .....±20%
N.....±30%
P .....+100−0%
Q .....+30−10%
Z .....+80−20%

PACKING & ACCESSORIES

Ref. No.	Part No.	Description
	141-6-133T-83500	INNER CORR CASE (USA)
	141-6-133T-83502	INNER CORR CASE (GENERAL)
	141-6-133T-83504	INNER CORR CASE (CANADA)
	141-6-133T-83505	INNER CORR CASE (AUSTRALIA)
	141-6-133T-83506	INNER CORR CASE (EUROPE)
	141-6-133T-83507	INNER CORR CASE (ITALY)
	141-6-145T-14000	FOAM PLASTIC CASE, FRONT
	141-6-145T-14100	FOAM PLASTIC CASE, REAR
	141-6-479T-86200	LABEL, DHHS DATE CORD LABEL
	141-6-231T-15250	INNER POLYE COVER, INST MANUAL
	141-6-235T-20300	INNER POLYE LAMINA COVER, SET (GENERAL)
	141-6-235T-20301	INNER POLYE LAMINA COVER, SET (EXCEPT GENERAL)
	141-6-231T-10250	INNER POLYE COVER, AC CORD
	141-6-318T-13501	PAD, PICK UP PROTECTOR (EXCEPT AUSTRALIA)
	141-6-409T-35900	INST MANUAL (U.S.A)
	141-6-409T-35901	INST MANUAL (CANADA)
	141-6-409T-35902	INST MANUAL (AUSTRALIA)
	141-6-409T-35903	INST MANUAL (EUROPE,ITALY)
	141-6-409T-36500	INST MANUAL (GENERAL)
	4-236T-11201	PLUG ASSY (GENERAL)

ACCESSORIES

Ref. No.	Part No.	Description
	⚠ 4-243T-12380	LEAD CORD (AUSTRALIA)
	⚠ 4-243T-13080	LEAD CORD (GENERAL)
	⚠ 4-243T-77981	POWER CORD (EUROPE,ITALY)
	⚠ 4-243T-80981	POWER CORD (U.S.A,CANADA)
	⚠ 4-243T-37173	LEAD CORD

CABINET & CHASSIS

Ref. No.	Part No.	Description
1	141-0-122T-62800	FRONT PANEL ASSY (U.S.A, AUSTRALIA,CANADA,GENERAL)
	141-0-122T-62801	FRONT PANEL ASSY (EUROPE,ITALY)
2	141-0-121T-21803	DECK PANEL ASSY (U.S.A)
	141-0-121T-21804	DECK PANEL ASSY (GENERAL-BLACK)
	141-0-121T-21805	DECK PANEL ASSY (GENERAL-GRAY)
	141-0-121T-21806	DECK PANEL ASSY (GENERAL-RED)
	141-0-121T-21807	DECK PANEL ASSY (CANADA)
	141-0-121T-21808	DECK PANEL ASSY (AUSTRALIA)
	141-0-121T-21809	DECK PANEL ASSY (EUROPE-BLACK,RED)
	141-0-121T-21810	DECK PANEL ASSY (EUROPE)
	141-0-121T-21811	DECK PANEL ASSY (ITALY-WHITE)
	141-0-121T-21812	DECK PANEL ASSY (ITALY-BLUE)
	141-0-121T-21813	DECK PANEL ASSY (ITALY-YELLOW)
	141-0-121T-21814	DECK PANEL ASSY (ITALY-BLACK,RED)
3	141-0-124T-50503	TOP LID ASSY (BLACK/U.S.A,GENERAL)
	141-0-124T-50504	TOP LID ASSY (GRAY/GENERAL)
	141-0-124T-50505	TOP LID ASSY (RED/GENERAL)
	141-0-124T-50507	TOP LID ASSY (GRAY/EUROPE)
	141-0-124T-50508	TOP LID ASSY (RED/EUROPE,ITALY)
	141-0-124T-50509	TOP LID ASSY (WHITE/ITALY)
	141-0-124T-50510	TOP LID ASSY (BLUE/ITALY)
	141-0-124T-50511	TOP LID ASSY (YELLOW/ITALY)
	141-0-124T-50506	TOP LID ASSY (BLACK/EUROPE, ITALY)(AUSTRALIA,CANADA)
4	141-0-125T-41402	BOTTOM LID ASSY (GENERAL)
	141-0-125T-41404	BOTTOM LID ASSY (U.S.A)
	141-0-125T-41405	BOTTOM LID ASSY (CANADA)
	141-0-125T-41406	BOTTOM LID ASSY (AUSTRALIA)
	141-0-125T-41407	BOTTOM LID ASSY (EUROPE,ITALY)
5	141-0-581T-46200	GEAR ASSY
6	141-2-210T-76000	BRACKET, TOP LID
7	141-2-251T-08900	HINGE, TOP LID FULCRUM
8	141-2-754T-87600	SHAFT, TOP LID FULCRUM
9	141-2-210T-76200	BRACKET, DISK PRESSURE LEVER
10	141-0-136T-00100	COVER ASSY
11	141-2-853T-93000	SPRING PLATE, COVER STOPPER

Ref. No.	Part No.	Description
12	141-2-856T-63500	SPRING COIL, DISK PRESSURE
13	141-2-421T-62300	SPECIAL SCREW, (4)(9) MTG. (5PC'S)
14	141-2-160T-69000	PUSH BUTTON, EJECT
15	141-2-154T-09100	ESCUTCHEON, MECHA COVER LEFT
16	141-2-154T-09200	ESCUTCHEON, MECHA COVER RIGHT
17	141-2-290T-17300	BRACKET, MECHA CHASSIS
18	141-2-421T-60800	SPECIAL SCREW, MECHA (4PC'S)
19	141-2-445T-34100	RUBBER CUSHION, MECHA DUMPER (4PC'S)
20	141-2-461T-52400	PIPE, MECHA (4PC'S)
21	141-2-160T-69100	PUSH BUTTON, MEMORY/REPEAT/MODE (3PC'S)
22	141-2-160T-69200	PUSH BUTTON, STOP
23	141-2-160T-69300	PUSH BUTTON, PLAY/PAUSE
24	141-0-160T-69400	PUSH BUTTON ASSY, FAST FWD/FAST REW
25	141-2-165T-06900	ROTARY KNOB, VOLUME KNOB
26	141-2-164T-44000	SLIDE KNOB, POWER SW
27	141-2-210T-76300	BRACKET, PCB FIXER
28	141-2-174T-13100	STAND, FELT DC POWER PCB (U.S.A)
	141-2-448T-29900	CUSHION FELT DC POWER PCB (EXCEPT U.S.A)
29	141-2-247T-55700	SHEET, MAIN PCB
30	141-2-210T-76100	BRACKET, LCD COVER
31	141-2-210T-79600	BRACKET, HANGER STRAP OUTER
32	141-2-210T-81600	BRACKET, HANGER STRAP INNER
33	141-2-172T-04300	HANGER, HOOK
34	141-0-214T-09800	BRACKET FRAME ASSY, MECHANISM
35	141-2-856T-59700	SPRING COIL, TOP LID OPENER
36	141-2-856T-59600	SPRING COIL, TOP LID LOCK
37	141-2-453T-00801	WASHER 3X8X0.5T, BOTTOM LID
38	141-2-448T-25000	CUSHION, 8X35X2T, LEAD RETAINER (10PC'S)
39	141-2-247T-63600	SHEET, MECHA FPC STOP (2PC'S)
40	141-2-247T-63500	SHEET, MECHA FPC STOP (2PC'S)
41	141-2-448T-28000	CUSHION 7X7X4T, BUTTON (22,23)
42	141-2-447T-48002	CUSHION 20X30X3T, PCB
43	141-2-247T-67600	SHEET, FIBER 10X28X1T, RCA SOCKET
44	141-2-447T-69101	CUSHION 8X4X1T, LCD STOP
45	141-2-246T-24900	SHEET, FIBER 10X15X0.5T, IC
46	141-2-174T-13200	STAND, MAIN PCB
47	141-2-453T-30601	WASHER, GNW 4.5X7X0.25
48	141-2-464T-40200	FIXER

FIXING PARTS

Ref. No.	Part No.	Description
Y1	BS3NS1R4+2+ZK	PAN HD 3 SPECIAL SCREW, BRACKET (9)
Y2	BJNBS++2+6+ZK	PAN HD SCREW 2X6, BOTTOM LID (4)
Y3	BJN2S++2+5+Z1	PAN HD 2 TAPPING SCREW 2X5, BRACKET (32)
Y4	BJN2S++2+8+ZK	PAN HD 2 TAPPING SCREW 2X8, FRONT PANEL (1)
Y5	BS3NS1R4+4+N1	PAN HD 3 SPECIAL SCREW, PCB (61,64)
Y6	BJN2S++2+5+Z1	PAN HD 2 TAPPING SCREW 2X5, PCB (63)
Y7	BJN2S++2+8+Z1	PAN HD 2 TAPPING SCREW 2X8, BRACKET FRAME (34)
Y8	BS3NS1R4+4+ZK	PAN HD 3 SPECIAL SCREW 1.4 x 4, MECHA-BRACKET FRAME
Y9	BS3NS1R43R+N1	PAN HD 3 SPECIAL SCREW 1.4X3.5, HINGE (7)
Y10	BJN2S++2+8+Z1	PAN HD 2 TAPPING SCREW 2X8, GEAR (5)
Y11	BS3NS1R4+3+Z1	PAN HD 3 SPECIAL SCREW 1.4X3, VR KNOB (25)
Y12	WJKWS++2NO4Z1	WASHER 2X4X0.4T, VR KNOB (25)
Y13	BS3NS1R43R+N1	PAN HD 3 SPECIAL SCREW 1.4X3.5, ESCUTCHEON (15,16)
Y14	BJNBS++2+4+Z1	PAN HD SCREW 2X4, BRACKET (17)
Y15	141-2-457T-23100	SPECIAL WASHER, SPRING COIL (35)

ELECTRICAL PARTS

Ref. No.	Part No.	Description
51	⚠ 4-180T-00700	PICK UP
52	⚠ 4-320T-15900	P.T (U.S.A)
	⚠ 4-320T-16000	P.T (EUROPE)
	⚠ 4-320T-16100	P.T (GENERAL)
	⚠ 4-320T-16200	P.T (AUSTRALIA)
	⚠ 4-320T-16300	P.T (CANADA)
	⚠ 4-320T-19900	P.T (ITALY)
53	4-267T-17173	SOCKET 3P
54	141-2-472T-00200	LUG
55	123-2-472R-00401	LUG
C958	CC+50473ZDZFS	CERAMIC 0.047MF 50V Z D ZF (EUROPE)

MAIN P.C.BOARD ASSY

Ref. No.	Part No.	Description
61	141-4-285T-70700	P.C BOARD ASSY, MAIN
	4-240T-30372	SOCKET, HEADPHONE
	4-236T-25173	PLUG 5P
T401	4-256T-39900	I.F.T, PLL VCO ADJUST
L701	4-253T-19500	FILTER 1UH
X401	4-266T-01900	CERAMIC RESONATOR
X501	4-266T-01300	CERAMIC RESONATOR
X701	4-225T-06800	CRYSTAL, 35.002MHZ
SVR101	4-220T-32089	V.R 100KB, TRACKING BALANCE ADJUST
SVR102	4-220T-32083	V.R 10KB, FOCUS OFFSET ADJUST
SVR201	4-220T-32083	V.R 10KB, FOCUS GAIN ADJUST
SVR202	4-220T-32083	V.R 10KB, TRACKING GAIN ADJUST
IC101	SICX20109T2++	IC CX20109 T2 FIP24
IC201	SICX20108T2++	IC CX20108 T2 FIP30
IC301	SINJM4560MT2+	IC NJM4560M T2 FIP8
IC302	SINJM4558MT2+	IC NJM4558M T2 FIP8
IC303	SINJM2901MT2+	IC NJM2901M T2 FIP14
IC304	SIMB3763PFT2+	IC MB3763PF T2 FIP8
IC305	SIMB3763PFT2+	IC MB3763PF T2 FIP8
IC306	SITC4049BFT2+	IC TC4049BF T2 FIP16
IC401	SICX23035++++	IC CX23035
IC402	SICXK5816M15L	IC CXK5816M FIP24
or	SITC5516AF+2+	IC TC5516AF 2
IC403	SINJM082BMT2+	IC NJM082BM T2 FIP8
IC501	SIT47C4208172	IC TMP47C420AF8172Z QIP67 (4-285F70700)
or	SIT47C4208173	IC TMP47C420AF8173Z QIP67 (4-285T70700A)
IC502	SINJM2903MT2+	IC NJM2903M T2 FIP8
IC701	SICX20133++++	IC CX20133 FIP28
IC702,802	SIM5238FP++++	IC M5238FP FIP8
or	SINJM072M++++	IC NJM072M FIP8
IC703	SIUPD4053BG++	IC UPD4053BG FIP16
IC704	SIAL063++++++	IC AL063 SIP10
IC705	SINJM4560MT2+	IC NJM4560M T2 FIP8
IC706	SINJM4556S+++	IC NJM4556S SIP9
IC901	SIS81250HG+++	IC S81250HG SIP3
Q201,203	STD999+CL+++Z	TR 2SD999 CL CHIP
Q202,204	STB798+DL+++Z	TR 2SB798 DL CHIP
Q301	STC2412R++++Z	TR 2SC2412K R CHIP

Ref. No.	Part No.	Description
Q301	STC2712Y++++Z	TR 2SC2712 Y CHIP
Q302~305	STC2411R++++Z	TR 2SC2411K R CHIP
or	STC3265Y++++Z	TR 2SC3265 Y CHIP
Q501~503	STDTA124EK++Z	TR DTA124EK CHIP
Q504,505	STDTC124EK++Z	TR DTC124EK CHIP
Q506	STDTA124EK++Z	TR DTA124EK CHIP
Q507	STDTC124EK++Z	TR DTC124EK CHIP
Q508	STDTA124EK++Z	TR DTA124EK CHIP
Q509	STDTC124EK++Z	TR DTC124EK CHIP
Q701,801	SF2K209+++BLZ	FET 2SK209 BL CHIP
or	SF2K209+++GRZ	FET 2SK209 GR CHIP
Q702,703	STC3326B++++Z	TR 2SC3326 B CHIP
Q704,804	STC2412R++++Z	TR 2SC2412K R CHIP
or	STC2712Y++++Z	TR 2SC2712 Y CHIP
Q802,803	STC3326B++++Z	TR 2SC3326 B CHIP
Q901	STB798+DL+++Z	TR 2SB798 DL CHIP
Q902,903	STC2412R++++Z	TR 2SC2412K R CHIP
or	STC2712Y++++Z	TR 2SC2712 Y CHIP
Q904	STD999+CL+++Z	TR 2SD999 CL CHIP
Q905,906	STA1037R++++Z	TR 2SA1037K R CHIP
or	STA1162Y++++Z	TR 2SA1162 Y CHIP
Q907	STA1036R++++Z	TR 2SA1036K R CHIP
or	STA1298Y++++Z	TR 2SA1298 Y CHIP
Q908,909	STC2412R++++Z	TR 2SC2412K R CHIP
or	STC2712Y++++Z	TR 2SC2712 Y CHIP
Q910	STC2411R++++Z	TR 2SC2411K R CHIP
or	STC3265Y++++Z	TR 2SC3265 Y CHIP
D301~306	SDDAP202++++Z	DIODE DAP202K CHIP
D307	SDDA204+++++Z	DIODE DA204K
D308	SDDAP202++++Z	DIODE DAP202K CHIP
D401	SCKV1236Z2+++	VARACTOR DIODE KV1236 Z2
D402	SDDAP202++++Z	DIODE DAP202K CHIP
D501,502	SDDAP202++++Z	DIODE DAP202K CHIP
D901	SDDAP202++++Z	DIODE DAP202K CHIP
C101	CC+50103KZYBR	CHIP CC 0.01 50V K Z YB
C102	CC+50330JZSLR	CHIP CC 33PF 50V J Z SL
C103,104	CC+50470JZSLR	CHIP CC 47PF 50V J Z SL
C105,106	CC+50151JZSLR	CHIP CC 150PF 50V J Z SL
C107	CC+25333KZYBZ	CHIP CC 0.033 25V K Z YB
C108	CT+25474MZYEZ	CHP TNTL 0.47MF 25V M Z YE
C109	CC+50103KZYBR	CHIP CC 0.01 50V K Z YB
C110	CE+16106MVAKS	ELECT 10MF 16V M V AK
C111,112	CT+10475MZYEZ	CHP TNTL 4.7MF 10V M Z YE
C113	CC+50050CZSLR	CHIP CC 5PF 50V C Z SL
C126	CC+50680JZSLR	CHIP CC 68PF 50V J Z SL
C201	CC+25104MZYBZ	CHIP CC 0.1 25V M Z YB
C203	CC+25683KZYBZ	CHIP CC 0.068 25V K Z YB
C204	CC+25683KZYBZ	CHIP CC 0.068 25V K Z YB
C205	CC+50101JZSLR	CHIP CC 100PF 50V J Z SL
C206	CC+25393KZYBZ	CHIP CC 0.039 25V K Z YB
C207	CC+50682KZYBR	CHIP CC 6800PF 50V K Z YB
C208	CC+50122KZYBR	CHIP CC 1200PF 50V K Z YB
C209	CT+25334MZYEZ	CHP TNTL 0.33MF 25V M Z YE
C210	CC+50562KZYBR	CHIP CC 5600PF 50V K Z YB
C211	CC+50682KZYBR	CHIP CC 6800PF 50V K Z YB
C212	CC+50123KZYBR	CHIP CC 0.012 50V K Z YB
C214	CC+25224ZZYFZ	CHIP CC 0.22 25V Z Z YF
C215	CT+10475MZYEZ	CHP TNTL 4.7MF 10V M Z YE
C217	CE+16106MVAKS	ELECT 10MF 16V M V AK
C218	CE+25475MVAKS	ELECT 4.7MF 25V M V AK
C219,220	CC+25104ZZYFR	CHIP CC 0.1 25V Z Z YF
C221,222	CE6R3336MVAKS	ELECT 33MF 6.3V M V AK
C223	CC+25473KZYBZ	CHIP CC 0.047 25V K Z YB
C224	CC+25223KZYBR	CHIP CC 0.022 25V K Z YB
C301	CC+50103KZYBR	CHIP CC 0.01 50V K Z YB
C302	CC+50102KZYBR	CHIP CC 1000PF 50V K Z YB
C303	CC+25104ZZYFR	CHIP CC 0.1 25V Z Z YF
C304,305	CC+25223KZYBR	CHIP CC 0.022 25V K Z YB
C306,307	CE+25475MVAKS	ELECT 4.7MF 25V M V AK
C308,309	CC+50103KZYBR	CHIP CC 0.01 50V K Z YB
C310,311	CC+25104ZZYFR	CHIP CC 0.1 25V Z Z YF
C401,402	CC+50390JZCHR	CHIP CC 39PF 50V J Z CH
C403,404	CC+25104ZZYFR	CHIP CC 0.1 25V Z Z YF

Ref. No.	Part No.	Description
C405	CC+25104MZYBZ	CHIP CC 0.1 25V M Z YB
C406	CE+25475MVAKS	ELECT 4.7MF 25V M V AK
C407,408	CC+50222KZYBR	CHIP CC 2200PF 50V K Z YB
C409,410	CC+50330JZCHR	CHIP CC 33PF 50V J Z CH
C411	CC+50221JZCHR	CHIP CC 220PF 50V J Z CH
C412	CT+16105MZYEZ	CHP TNTL 1MF 16V M Z YE
C413	CC+25223KZYBR	CHIP CC 0.022 25V K Z YB
C414	CC+25333KZYBZ	CHIP CC 0.033 25V K Z YB
C415	CC+50681JZSLR	CHIP CC 680PF 50V J Z SL
C416,417	CC+25104ZZYFR	CHIP CC 0.1 25V Z Z YF
C418	CE6R3336MVAKS	ELECT 33MF 6.3V M V AK
C419	CC+50101JZSLR	CHIP CC 100PF 50V J Z SL
C501,502	CC+50330JZSLR	CHIP CC 33PF 50V J Z SL
C503	CE+50474MVAKS	ELECT 0.47MF 50V M V AK
C701,702	CC+50470JZSLR	CHIP CC 47PF 50V J Z SL
C703	CC+50180JZSLR	CHIP CC 18PF 50V J Z SL
C704	CC+50102KZYBR	CHIP CC 1000PF 50V K Z YB
C705	CE+10336MVHAS	ELECT 33MF 10V M V HA S
C706	CE6R3336MVHAS	ELECT 33MF 6.3V M V HA S
C707	CT+16105MZYEZ	CHP TNTL 1MF 16V M Z YE
C708	CT+10475MZYEZ	CHP TNTL 4.7MF 10V M Z YE
C709,710	CC+25104ZZYFR	CHIP CC 0.1 25V Z Z YF
C711	CC+50152JZCHZ	CHIP CC 1500PF 50V J Z CH
C712	CE6R3336MVHAS	ELECT 33MF 6.3V M V HA S
C713	CC+50221JZCHR	CHIP CC 220PF 50V J Z CH
C714,715	CC+50471JZSLR	CHIP CC 470PF 50V J Z SL
C716	CC+25683KZYBZ	CHIP CC 0.068 25V K Z YB
C717	CE+25475MVAKS	ELECT 4.7MF 25V M V AK
C719	CC+50102KZYBR	CHIP CC 1000PF 50V K Z YB
C811	CC+50152JZCHZ	CHIP CC 1500PF 50V J Z CH
C812	CE6R3336MVHAS	ELECT 33MF 6.3V M V HA S
C813	CC+50221JZCHR	CHIP CC 220PF 50V J Z CH
C814,815	CC+50471JZSLR	CHIP CC 470PF 50V J Z SL
C816	CC+25683KZYBZ	CHIP CC 0.068 25V K Z YB
C817	CE+25475MVAKS	ELECT 4.7MF 25V M V AK
C819	CC+50102KZYBR	CHIP CC 1000PF 50V K Z YB
C901	CC+50470JZSLR	CHIP CC 47PF 50V J Z SL
C903	CE+16107MVHAS	ELECT 100MF 16V M V HA S
C904	CE+50225MVAKS	ELECT 2.2MF 50V M V AK
C905	CE+10226MVHAS	ELECT 22MF 10V M V HA S
C906	CE+50105MVAKS	ELECT 1MF 50V M V AK
C907,908	CE+16227MVHAS	ELECT 220MF 16V M V HA S
C909,910	CE6R3336MVHAS	ELECT 33MF 6.3V M V HA S
C911,912	CE6R3476MVHAS	ELECT 47MF 6.3V M V HA
C921	CT+16105MZYEZ	CHP TNTL 1MF 16V M Z YE
R101	RM/10822JZM+Z	MT-GLAZE Z 8.2K J 1/10W Z
R102	RM/10392JZM+Z	MT-GLAZE Z 3.9K J 1/10W Z
R103	RM/10223JZM+Z	MT-GLAZE Z 22K J 1/10W Z
R104	RM/10222JZM+Z	MT-GLAZE Z 2.2K J 1/10W Z
R105	RM/10474JZM+Z	MT-GLAZE Z 470K J 1/10W Z
R106	RM/10224JZM+Z	MT-GLAZE Z 220K J 1/10W Z
R107	RM/10184JZM+Z	MT-GLAZE Z 180K J 1/10W Z
R108,109	RM/10333JZM+Z	MT-GLAZE Z 33K J 1/10W Z
R110	RM/10334JZM+Z	MT-GLAZE Z 330K J 1/10W Z
R111,112	RM/10103JZM+Z	MT-GLAZE Z 10K J 1/10W Z
R113	RM/10104JZM+Z	MT-GLAZE Z 100K J 1/10W Z
R114	RM/10103JZM+Z	MT-GLAZE Z 10K J 1/10W Z
R115	RM/10102JZM+Z	MT-GLAZE Z 1.0K J 1/10W Z
R201,202	RM/10333JZM+Z	MT-GLAZE Z 33K J 1/10W Z
R204	RM/10103JZM+Z	MT-GLAZE Z 10K J 1/10W Z
R205	RM/10391JZM+Z	MT-GLAZE Z 390 J 1/10W Z
R206,207	RM/10823JZM+Z	MT-GLAZE Z 82K J 1/10W Z
R208	RM/10271JZM+Z	MT-GLAZE Z 270 J 1/10W Z
R209	RM/10333JZM+Z	MT-GLAZE Z 33K J 1/10W Z
R210	RM/10223JZM+Z	MT-GLAZE Z 22K J 1/10W Z
R211	RM/10562JZM+Z	MT-GLAZE Z 5.6K J 1/10W Z
R212	RM/10683JZM+Z	MT-GLAZE Z 68K J 1/10W Z
R213	RM/10473JZM+Z	MT-GLAZE Z 47K J 1/10W Z
R215	RM/10472JZM+Z	MT-GLAZE Z 4.7K J 1/10W Z
R216,217	RM/10153JZM+Z	MT-GLAZE Z 15K J 1/10W Z
R218	RM/10272JZM+Z	MT-GLAZE Z 2.7K J 1/10W Z
R219	RM/10105JZM+Z	MT-GLAZE Z 1.0M J 1/10W Z
R220	RM/10473JZM+Z	MT-GLAZE Z 47K J 1/10W Z
R221	RM/10271JZM+Z	MT-GLAZE Z 270 J 1/10W Z

Ref. No.	Part No.	Description
R222	RM/10823JZM+Z	MT-GLAZE Z 82K J 1/10W Z
R223	RM/10333JZM+Z	MT-GLAZE Z 33K J 1/10W Z
R224	RM/10123JZM+Z	MT-GLAZE Z 12K J 1/10W Z
R225	RM/10473JZM+Z	MT-GLAZE Z 47K J 1/10W Z
R226	RM/10124JZM+Z	MT-GLAZE Z 120K J 1/10W Z
R227	RM/10103JZM+Z	MT-GLAZE Z 10K J 1/10W Z
R228	RM/10183JZM+Z	MT-GLAZE Z 18K J 1/10W Z
R229	RM/10222JZM+Z	MT-GLAZE Z 2.2K J 1/10W Z
R230	RM/10224JZM+Z	MT-GLAZE Z 220K J 1/10W Z
R301~303	RM/10103JZM+Z	MT-GLAZE Z 10K J 1/10W Z
R304	RM/10222JZM+Z	MT-GLAZE Z 2.2K J 1/10W Z
R305	RM/10472JZM+Z	MT-GLAZE Z 4.7K J 1/10W Z
R306	RM/10224JZM+Z	MT-GLAZE Z 220K J 1/10W Z
R307	RM/10223JZM+Z	MT-GLAZE Z 22K J 1/10W Z
R308,309	RM/10103JZM+Z	MT-GLAZE Z 10K J 1/10W Z
R310	RM/10472JZM+Z	MT-GLAZE Z 4.7K J 1/10W Z
R311~313	RM/10103JZM+Z	MT-GLAZE Z 10K J 1/10W Z
R314,315	RM/10123JZM+Z	MT-GLAZE Z 12K J 1/10W Z
R321	RM/10102JZM+Z	MT-GLAZE Z 1.0K J 1/10W Z
R322	RM/10222JZM+Z	MT-GLAZE Z 2.2K J 1/10W Z
R323	RM/10102JZM+Z	MT-GLAZE Z 1.0K J 1/10W Z
R324	RM/10222JZM+Z	MT-GLAZE Z 2.2K J 1/10W Z
R325,326	RM/10223JZM+Z	MT-GLAZE Z 22K J 1/10W Z
R327~330	RM/10102JZM+Z	MT-GLAZE Z 1.0K J 1/10W Z
R331	RM/10473JZM+Z	MT-GLAZE Z 47K J 1/10W Z
R332	RM/10223JZM+Z	MT-GLAZE Z 22K J 1/10W Z
R333	RM/10473JZM+Z	MT-GLAZE Z 47K J 1/10W Z
R334	RM/10821JZM+Z	MT-GLAZE Z 820 J 1/10W Z
R335	RM/10391JZM+Z	MT-GLAZE Z 390 J 1/10W Z
R336	RM/10102JZM+Z	MT-GLAZE Z 1.0K J 1/10W Z
R337	RM/10222JZM+Z	MT-GLAZE Z 2.2K J 1/10W Z
R338	RM/10102JZM+Z	MT-GLAZE Z 1.0K J 1/10W Z
R339	RM/10222JZM+Z	MT-GLAZE Z 2.2K J 1/10W Z
R401	RM/10472JZM+Z	MT-GLAZE Z 4.7K J 1/10W Z
R402	RM/10272JZM+Z	MT-GLAZE Z 2.7K J 1/10W Z
R403,404	RM/10105JZM+Z	MT-GLAZE Z 1.0M J 1/10W Z
R405	RM/10123JZM+Z	MT-GLAZE Z 12K J 1/10W Z
R406	RM/10822JZM+Z	MT-GLAZE Z 8.2K J 1/10W Z
R407	RM/10153JZM+Z	MT-GLAZE Z 15K J 1/10W Z
R408,409	RM/10102JZM+Z	MT-GLAZE Z 1.0K J 1/10W Z
R410	RM/10153JZM+Z	MT-GLAZE Z 15K J 1/10W Z
R411,412	RM/10104JZM+Z	MT-GLAZE Z 100K J 1/10W Z
R413	RM/10392JZM+Z	MT-GLAZE Z 3.9K J 1/10W Z
R414	RM/10104JZM+Z	MT-GLAZE Z 100K J 1/10W Z
R415,416	RM/10334JZM+Z	MT-GLAZE Z 330K J 1/10W Z
R417	RM/10822JZM+Z	MT-GLAZE Z 8.2K J 1/10W Z
R418	RM/10223JZM+Z	MT-GLAZE Z 22K J 1/10W Z
R419	RM/10564JZM+Z	MT-GLAZE Z 560K J 1/10W Z
R420	RM/10393JZM+Z	MT-GLAZE Z 39K J 1/10W Z
R421	RM/10684JZM+Z	MT-GLAZE Z 680K J 1/10W Z
R422	RM/10153JZM+Z	MT-GLAZE Z 15K J 1/10W Z
R423,424	RM/10183JZM+Z	MT-GLAZE Z 18K J 1/10W Z
R425	RM/10103JZM+Z	MT-GLAZE Z 10K J 1/10W Z
R426	RM/10105JZM+Z	MT-GLAZE Z 1.0M J 1/10W Z
R501	RM/10334JZM+Z	MT-GLAZE Z 330K J 1/10W Z
R502~509	RM/10103JZM+Z	MT-GLAZE Z 10K J 1/10W Z
R510	RM/10104JZM+Z	MT-GLAZE Z 100K J 1/10W Z
R511	RM/10103JZM+Z	MT-GLAZE Z 10K J 1/10W Z
R512	RM/10154JZM+Z	MT-GLAZE Z 150K J 1/10W Z
R513	RM/10393JZM+Z	MT-GLAZE Z 39K J 1/10W Z
R514	RM/10823JZM+Z	MT-GLAZE Z 82K J 1/10W Z
R515	RM/10105JZM+Z	MT-GLAZE Z 1.0M J 1/10W Z
R516	RM/10823JZM+Z	MT-GLAZE Z 82K J 1/10W Z
R517	RM/10274JZM+Z	MT-GLAZE Z 270K J 1/10W Z
R518,519	RM/10102JZM+Z	MT-GLAZE Z 1.0K J 1/10W Z
R520,521	RM/10104JZM+Z	MT-GLAZE Z 100K J 1/10W Z
R522	RM/10223JZM+Z	MT-GLAZE Z 22K J 1/10W Z
R701	RM/10101JZM+Z	MT-GLAZE Z 100 J 1/10W Z
R702	RM/10563JZM+Z	MT-GLAZE Z 56K J 1/10W Z
R703	RM/10681JZM+Z	MT-GLAZE Z 680 J 1/10W Z
R704	RM/10472JZM+Z	MT-GLAZE Z 4.7K J 1/10W Z
R705	RM/10682JZM+Z	MT-GLAZE Z 6.8K J 1/10W Z
R706	RM/10123JZM+Z	MT-GLAZE Z 12K J 1/10W Z
R707	RM/10103JZM+Z	MT-GLAZE Z 10K J 1/10W Z
R708	RM/10562JZM+Z	MT-GLAZE Z 5.6K J 1/10W Z
R709,710	RM/10123JZM+Z	MT-GLAZE Z 12K J 1/10W Z
R711	RM/10822JZM+Z	MT-GLAZE Z 8.2K J 1/10W Z
R712	RM/10561JZM+Z	MT-GLAZE Z 560 J 1/10W Z
R714	RM/10221JZM+Z	MT-GLAZE Z 220 J 1/10W Z
R715	RM/10474JZM+Z	MT-GLAZE Z 470K J 1/10W Z
R716	RM/10103JZM+Z	MT-GLAZE Z 10K J 1/10W Z
R717	RM/10104JZM+Z	MT-GLAZE Z 100K J 1/10W Z
R718	RM/10471JZM+Z	MT-GLAZE Z 470 J 1/10W Z
R719	RM/10472JZM+Z	MT-GLAZE Z 4.7K J 1/10W Z
R720	RM/10392JZM+Z	MT-GLAZE Z 3.9K J 1/10W Z
R721	RM/10103JZM+Z	MT-GLAZE Z 10K J 1/10W Z
R722	RM/+8560JZM+Z	MT-GLAZE Z 56 J 1/8W Z
R723	RM/10472JZM+Z	MT-GLAZE Z 4.7K J 1/10W Z
R804	RM/10472JZM+Z	MT-GLAZE Z 4.7K J 1/10W Z
R805	RM/10682JZM+Z	MT-GLAZE Z 6.8K J 1/10W Z
R806	RM/10123JZM+Z	MT-GLAZE Z 12K J 1/10W Z
R807	RM/10103JZM+Z	MT-GLAZE Z 10K J 1/10W Z
R808	RM/10562JZM+Z	MT-GLAZE Z 5.6K J 1/10W Z
R809,810	RM/10123JZM+Z	MT-GLAZE Z 12K J 1/10W Z
R811	RM/10822JZM+Z	MT-GLAZE Z 8.2K J 1/10W Z
R812	RM/10561JZM+Z	MT-GLAZE Z 560 J 1/10W Z
R814	RM/10221JZM+Z	MT-GLAZE Z 220 J 1/10W Z
R815	RM/10474JZM+Z	MT-GLAZE Z 470K J 1/10W Z
R816	RM/10103JZM+Z	MT-GLAZE Z 10K J 1/10W Z
R817	RM/10104JZM+Z	MT-GLAZE Z 100K J 1/10W Z
R818	RM/10471JZM+Z	MT-GLAZE Z 470 J 1/10W Z
R819	RM/10472JZM+Z	MT-GLAZE Z 4.7K J 1/10W Z
R820	RM/10392JZM+Z	MT-GLAZE Z 3.9K J 1/10W Z
R821	RM/10103JZM+Z	MT-GLAZE Z 10K J 1/10W Z
R822	RM/+8560JZM+Z	MT-GLAZE Z 56 J 1/8W Z
R823	RM/10472JZM+Z	MT-GLAZE Z 4.7K J 1/10W Z
R901	RM/10472JZM+Z	MT-GLAZE Z 4.7K J 1/10W Z
R902	RM/10473JZM+Z	MT-GLAZE Z 47K J 1/10W Z
R903	RM/10472JZM+Z	MT-GLAZE Z 4.7K J 1/10W Z
R904	RM/10473JZM+Z	MT-GLAZE Z 47K J 1/10W Z
R905,906	RM/10222JZM+Z	MT-GLAZE Z 2.2K J 1/10W Z
R907	RM/10472JZM+Z	MT-GLAZE Z 4.7K J 1/10W Z
R908	RM/10153JZM+Z	MT-GLAZE Z 15K J 1/10W Z

LCD P.C.BOARD ASSY

Ref. No.	Part No.	Description
62	141-4-285T-70800	P.C BOARD ASSY, LCD
	4-970T-02000	L.C.D

KEY SW P.C.BOARD ASSY

Ref. No.	Part No.	Description
63	141-4-285T-70900	P.C BOARD ASSY, KEY SW
	4-267T-20600	SOCKET 8P
S602~608	4-248T-14100	SWITCH

SW VR P.C.BOARD ASSY

Ref. No.	Part No.	Description
64	141-4-285T-71000	P.C BOARD ASSY, SW VR
	4-267T-20700	SOCKET 5P
S601	4-248T-18300	SWITCH, POWER
VR701	4-220T-36800	V.R 20KAX2, HEADPHONE VOLUME

CLOSE SW P.C.BOARD ASSY (U.S.A,CANADA, GENERAL)
CLOSE SW P.C.BOARD ASSY (AUSTRALIA, EUROPE, ITALY)

Ref. No.	Part No.	Description
65	141-4-285T-71100	P.C BOARD ASSY, CLOSE SW (U.S.A,CANADA,GENERAL)
	141-4-285T-71101	P.C BOARD ASSY, CLOSE LD SW (AUSTRALIA,EUROPE,ITALY)
	141-2-327T-36300	INSULATOR (AUSTRALIA,EUROPE,ITALY)
S609	4-248T-18600	SWITCH, OPEN/CLOSE
S901	141-2-382T-23700	TERMINAL, LASER SWITCH (PAIR USED)(AUSTRALIA,EUROPE,ITALY)
	141-2-382T-23800	TERMINAL, LASER SWITCH (PAIR USED)(AUSTRALIA,EUROPE,ITALY)

5.2V DC POWER P.C.BOARD ASSY

Ref. No.	Part No.	Description
66	141-4-285T-71200	P.C BOARD ASSY, 5.2V DC POWER (EXCEPT EUROPE)
	141-4-285T-71201	P.C BOARD ASSY, 5.2V DC POWER (EUROPE)
	141-2-382T-21000	TERMINAL
L931	4-252T-15400	CHOKE COIL
IC931	SIM5236L+++++	IC M5236L SIP3 (EXCEPT EUROPE)
	SIM5237L+++++	IC M5237L SIP3 (EUROPE)
IC932	SILA6358+++++	IC LA6358 DIP8
Q931	STB1142S++++L	TR 2SB1142 S L
	STB1142T++++L	TR 2SB1142 T L
Q932	STD1682S++++L	TR 2SD1682 S L
	STD1682T++++L	TR 2SD1682 T L
Q933	STA1241O+++++	TR 2SA1241 O
	STA1241Y+++++	TR 2SA1241 Y
Q934,935	STDTC124ES++1	TR DTC124ES SP
Q936	STA933+S+++++	TR 2SA933 S
Q937	STD545+E+++++	TR 2SD545 E
C931,932	CE+16226MVKSS	ELECT 22MF 16V M V KS
C933	CC+50102KDYBS	CERAMIC 0.001MF 50V K D YB
C934,935	CE6R3476MVKSS	ELECT 47MF 6.3V M V KS
R931,932	RC/+6221JP+++	CARBON P 220 OHM J 1/6W
R933	RC/+6153JP+++	CARBON P 15K OHM J 1/6W
R934	RC/+6123JP+++	CARBON P 12K OHM J 1/6W
R935	RC/+6392JP+++	CARBON P 3.9K OHM J 1/6W
R936,937	RC/+6153JP+++	CARBON P 15K OHM J 1/6W
R938	RC/+6223JP+++	CARBON P 22K OHM J 1/6W
R939	RC/+6331JP+++	CARBON P 330 OHM J 1/6W
R940	RC/+6333JP+++	CARBON P 33K OHM J 1/6W
R941	RC/+6223JP+++	CARBON P 22K OHM J 1/6W (EUROPE)
	RC/+6333JP+++	CARBON P 33K OHM J 1/6W (EXCEPT EUROPE)
R942	RC/+6104JP+++	CARBON P 100K OHM J 1/6W (EXCEPT EUROPE)
	RC/+6683JP+++	CARBON P 68K OHM J 1/6W (EUROPE)
R943	RC/+6331JP+++	CARBON P 330 OHM J 1/6W

LINE OUT P.C.BOARD ASSY

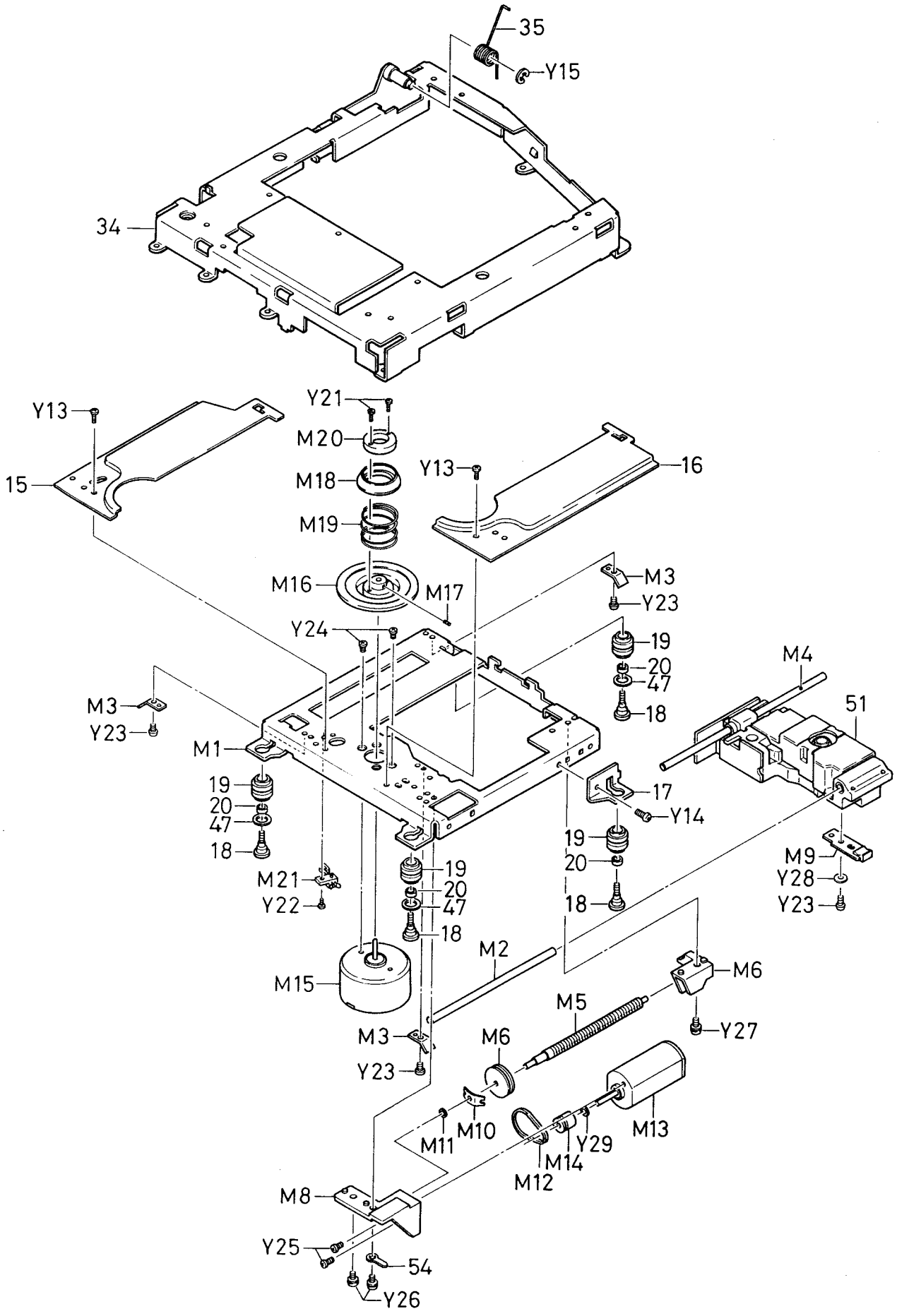
Ref. No.	Part No.	Description
67	141-4-285T-71300	P.C BOARD ASSY, LINE OUT (EXCEPT U.S.A)
	141-4-285T-71371	P.C BOARD ASSY, LINE OUT (U.S.A)
	4-267T-21300	SOCKET 3P
	4-240T-94700	SOCKET, LINE OUT LEFT
	4-240T-94771	SOCKET, LINE OUT RIGHT
C718,818	CM+50102KG++S	MYLAR 0.001MF 50V K G

DC POWER P.C.BOARD ASSY

Ref. No.	Part No.	Description
68	141-4-285T-71400	P.C BOARD ASSY, DC POWER (CANADA,GENERAL)
	141-4-285T-71471	P.C BOARD ASSY, DC POWER (U.S.A)
	141-4-285T-71472	P.C BOARD ASSY, DC POWER (EUROPE,ITALY,AUSTRALIA)
	4-236T-17900	PLUG 3P
IC951,952	SIICPF15+++++	IC ICP-F15 (AUSTRALIA,EUROPE,ITALY)
D951~954	SDDS135+D++++	DIODE DS135 D
C951,952	CE+16228MVHAS	ELECT 2200MF 16V M V HA S
C953	CC+50103ZDZFS	CERAMIC 0.01MF 50V Z D ZF
C954~957	CC+50103ZDZFS	CERAMIC 0.01MF 50V Z D ZF (AUSTRALIA,EUROPE,ITALY)

AC SOCKET P.C.BOARD ASSY

Ref. No.	Part No.	Description
69	141-4-285T-71500	P.C BOARD ASSY, AC SOCKET (AUSTRALIA,CANADA)
	141-4-285T-71501	P.C BOARD ASSY, AC SOCKET (ITALY)
	141-4-285T-71571	P.C BOARD ASSY, AC SOCKET (U.S.A)
	141-4-285T-71572	P.C BOARD ASSY, AC SOCKET (EUROPE)
	141-4-285T-71573	P.C BOARD ASSY, AC SOCKET (GENERAL)
⚠	4-240T-94500	SOCKET, AC IN (EXCEPT EUROPE,ITALY)
⚠	4-240T-94571	SOCKET, AC IN (EUROPE,ITALY)
⚠	4-238T-66100	SWITCH, VOLUTAGE SELECTOR (GENERAL)


35
Y15
34
Y13
15
Y21
M20
M18
M19
M16
M17
Y13
16
M3
Y23
Y24
19
20
47
18
M4
51
M3
Y23
M1
19
20
47
18
17
Y14
19
20
18
M9
Y28
Y23
M21
Y22
19
20
47
18
M2
M15
M6
M5
Y27
M3
Y23
M6
M11
M10
M14
M12
Y29
M13
M8
Y25
54
Y26

PARTS LIST (MECHANISM)

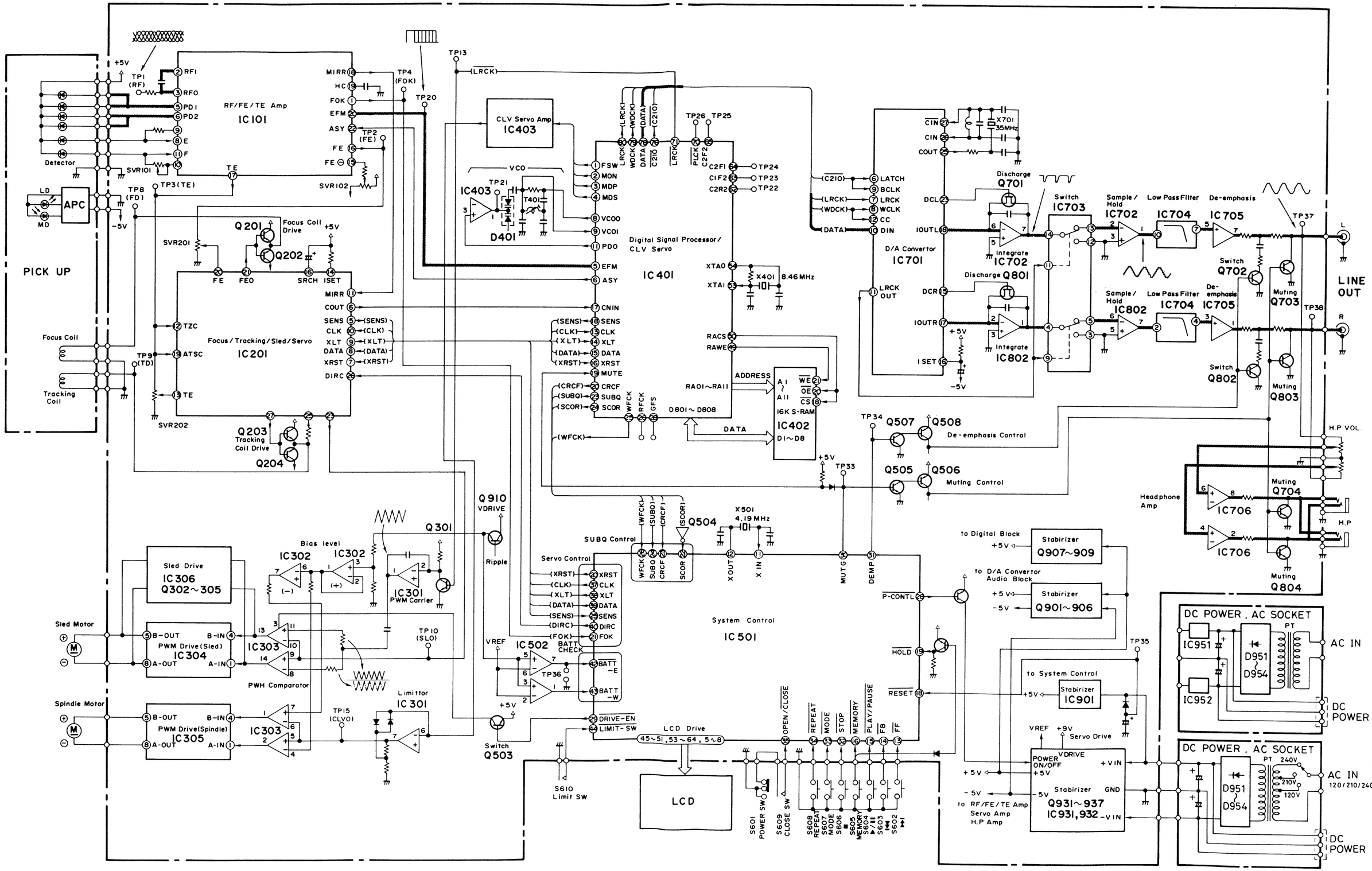
MECHANISM

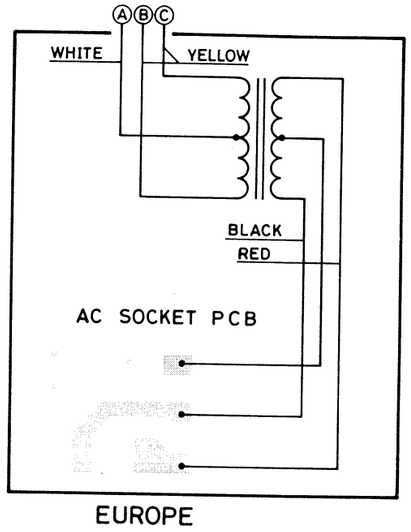
Ref. No.	Part No.	Description
M1	141-2-311T-53200	CHASSIS, MECHANISM BASE
M2	141-2-754T-88300	SHAFT, RAIL
M3	141-2-853T-93700	SPRING PLATE, SHAFT (M2)
M4	141-2-754T-88400	SHAFT, RAIL
M5	141-2-421T-66400	SPECIAL SCREW, PICK UP FORWARD
M6	141-2-581T-46700	GEAR, PICK UP FORWARD
M7	141-2-290T-18300	BRACKET, SPECIAL SCREW (M5)
M8	141-2-290T-18400	BRACKET, SPECIAL SCREW (M5)
M9	141-0-853T-93901	SPRING PLATE ASSY, PICK UP FORWARD
M10	141-2-853T-93800	SPRING PLATE, GEAR BACK TENSION
M11	141-2-457T-11000	SPECIAL WASHER
M12	141-2-564T-42600	SQUARE BELT
M13	4-527T-31100	COMMUTATE MOTOR, SLED
M14	141-2-661T-49800	PULLEY, MOTOR
M15	4-527T-31000	COMMUTATE MOTOR, SPINDLE
M16	141-2-118T-04200	TURN TABLE
M17	141-2-421T-66500	SPECIAL SCREW, TURN TABLE
M18	141-2-661T-47700	PULLEY, TURN TABLE
M19	141-2-856T-60800	SPRING COIL
M20	141-2-661T-49500	PULLEY
M21	4-238T-87900	SWITCH
M22	141-2-453T-31500	WASHER, 1.3DX3.0DX0.25T

FIXING PARTS (MECHANISM)

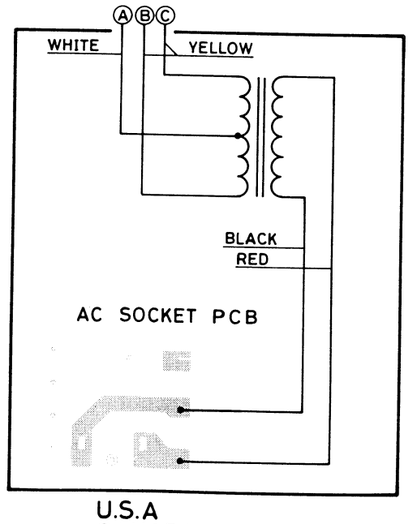
Ref. No.	Part No.	Description
Y21	BS1NS1R4+5+ZK	PAN HD 1 SPECIAL SCREW 1.4X5
Y22	BS3NS1R7+3+Z1	PAN HD 3 SPECIAL SCREW 1.7X3
Y23	BJNBS++2+2+Z1	PAN HD SCREW 2X2
or	BJNBS++2+2+Z1	PAN HD SCREW 2X2
Y24	BS1NS++2+2+ZK	PAN HD 1 SPECIAL SCREW 2X2
Y25	BJX2S++2+4+Z1	PAN HD SCREW W/SPRING WASHER 2X4
Y26	BJX2S2R6+4+Z1	PAN HD SCREW W/SPRING WASHER 2.6X4
Y27	BJX2S2R6+6+Z1	PAN HD SCREW W/SPRING WASHER 2.6X6
Y28	WJBWS++2R04Z1	WASHER 2X6X0.4T

BLOCK DIAGRAM

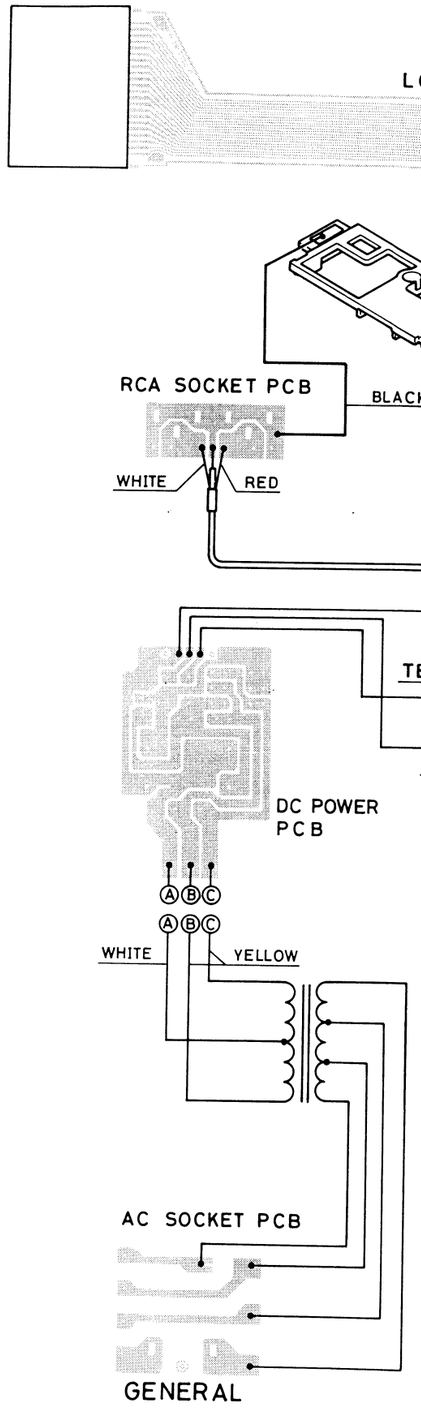




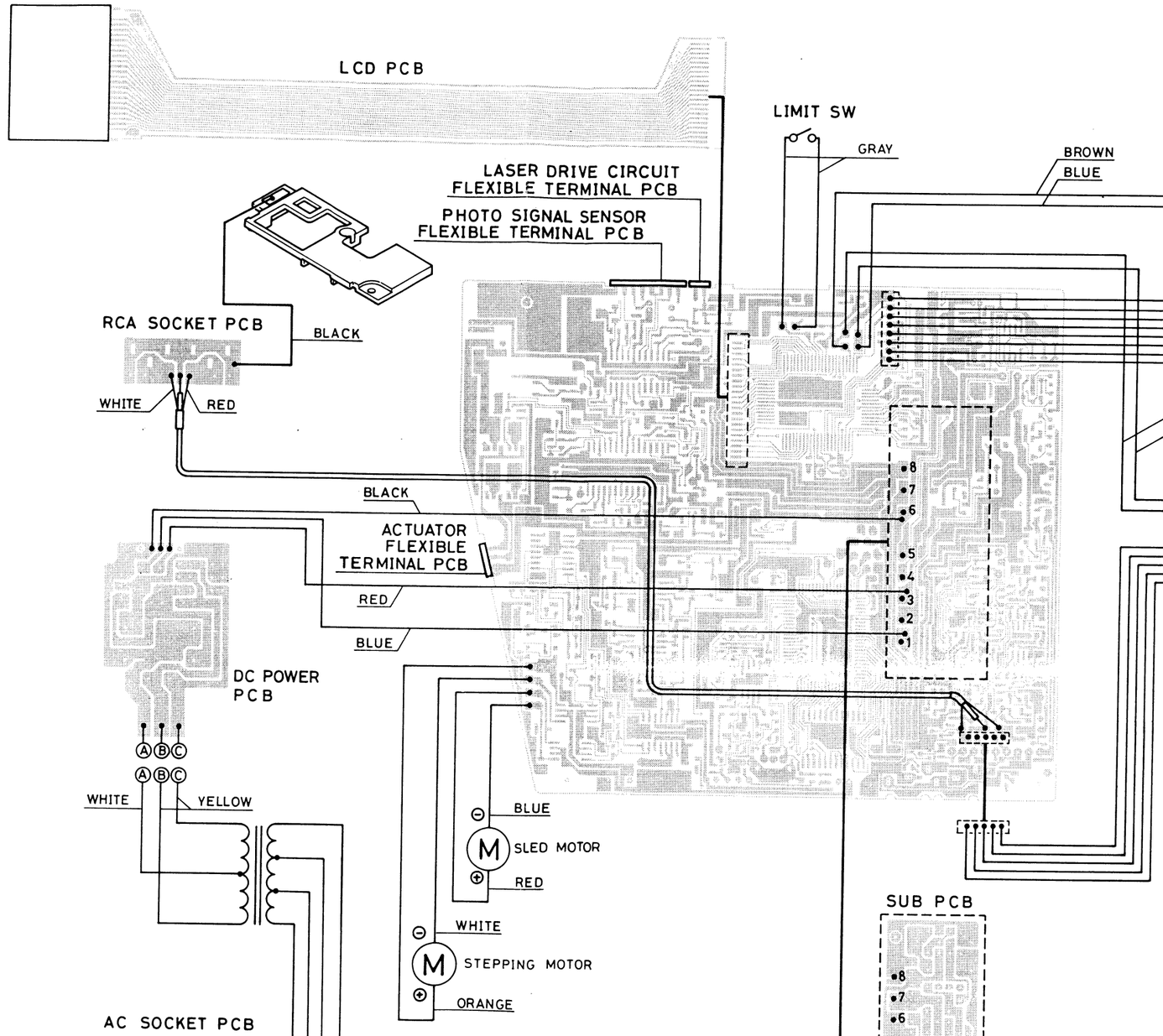
EUROPE



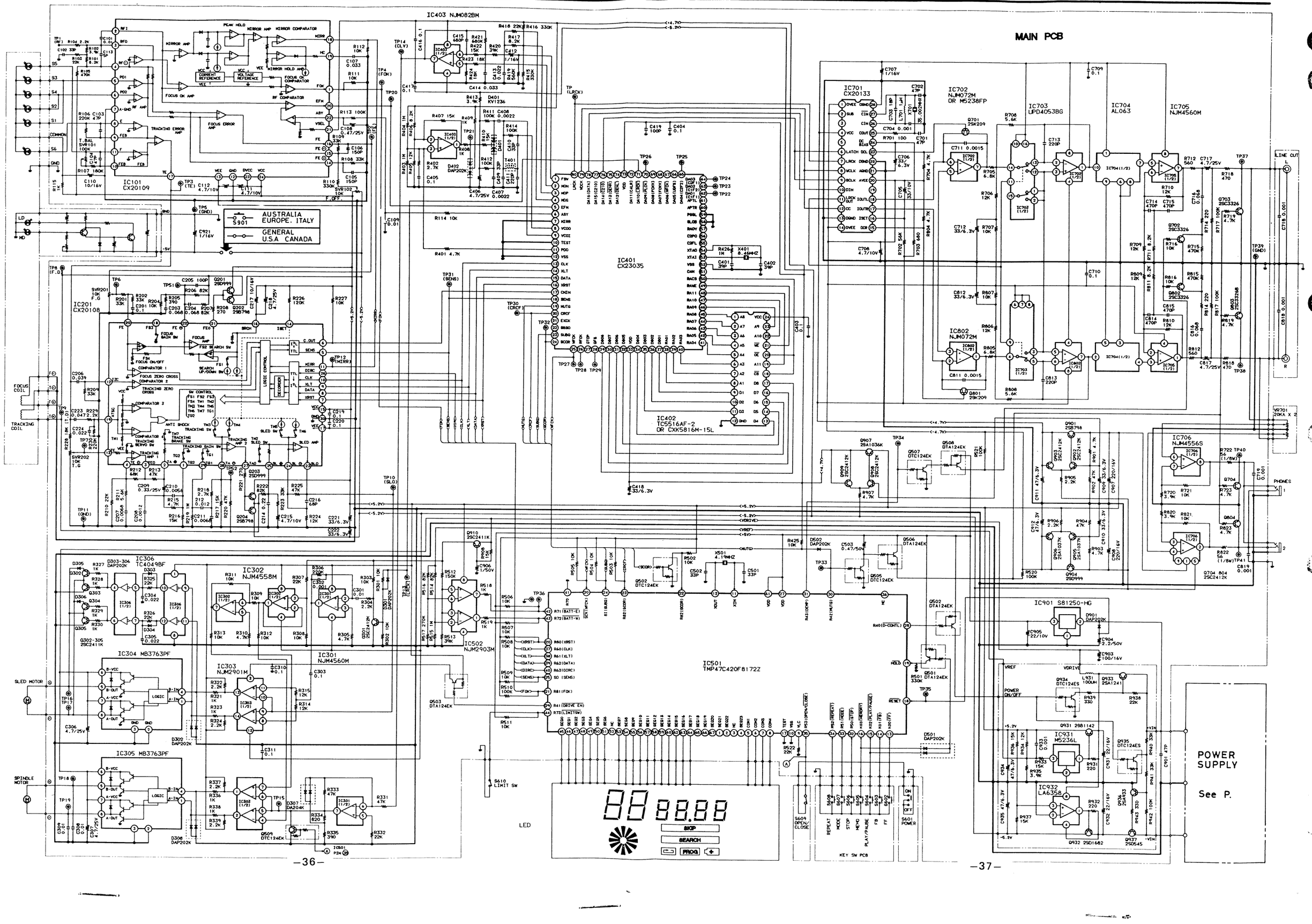
U.S.A
CANADA
AUSTRALIA
ITALY

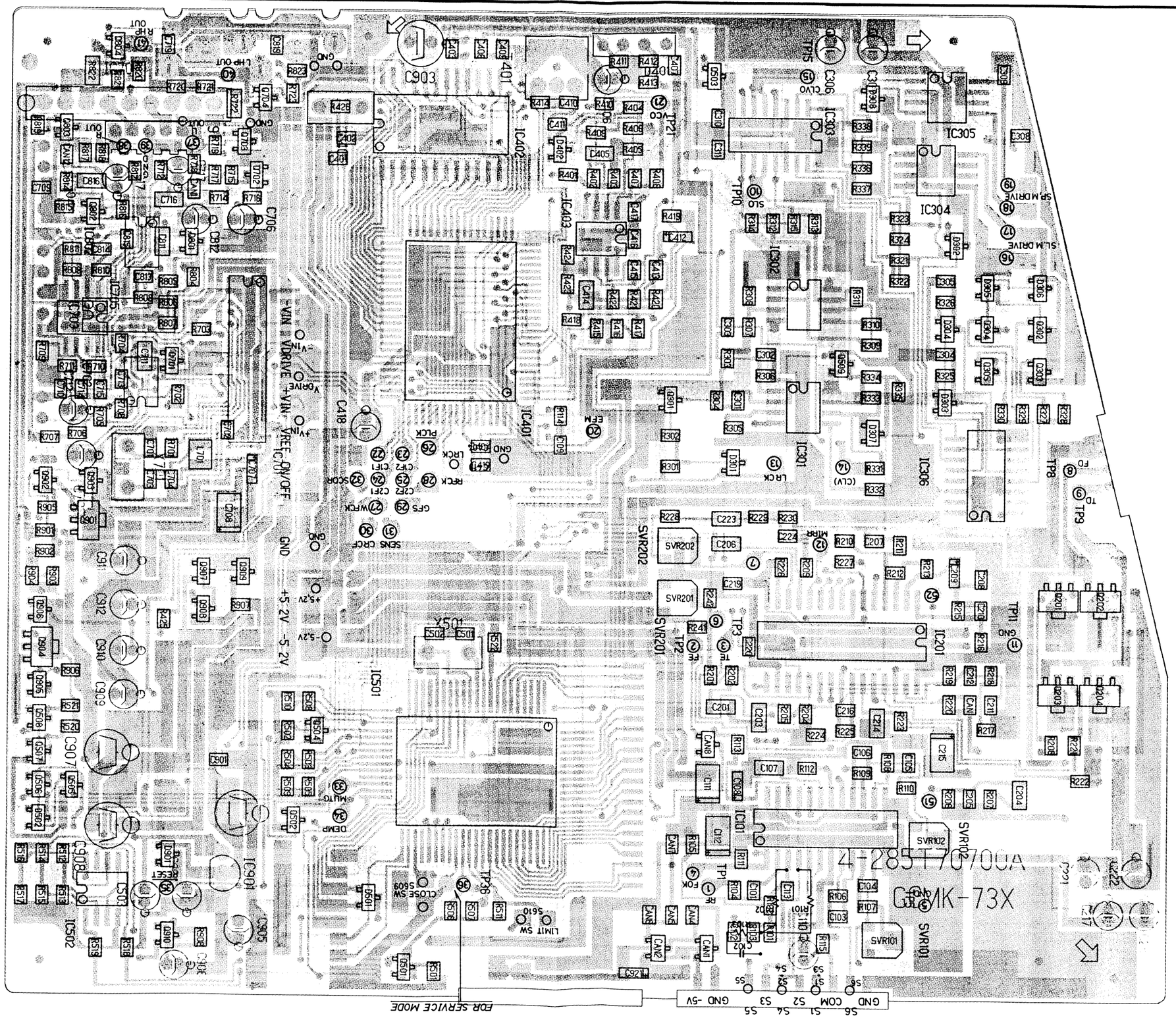


GENERAL

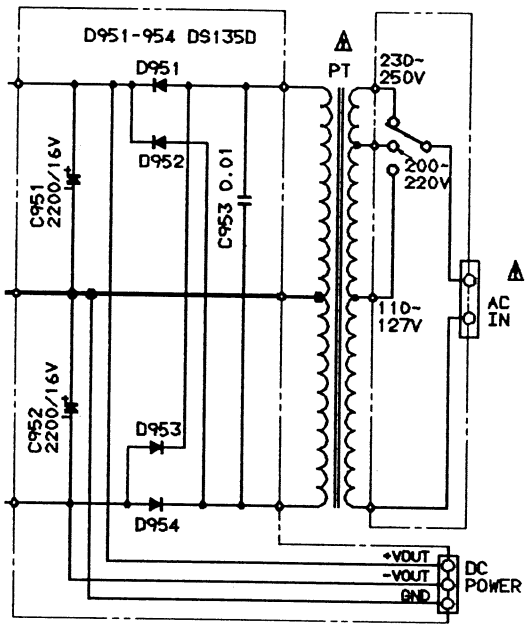


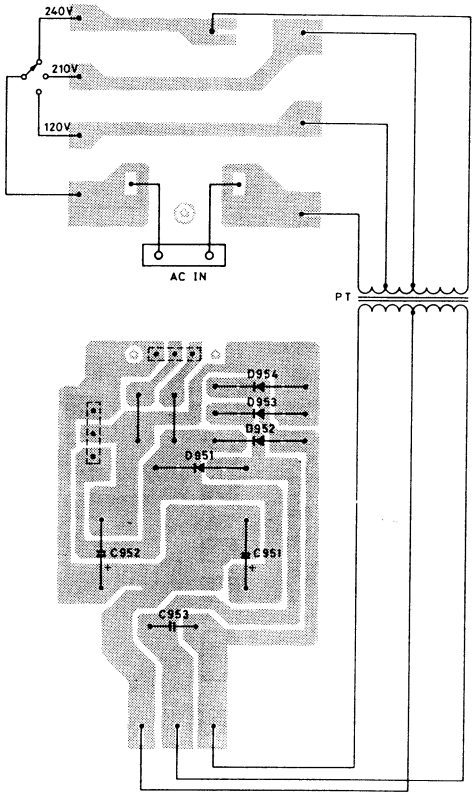
SCHEMATIC DIAGRAM



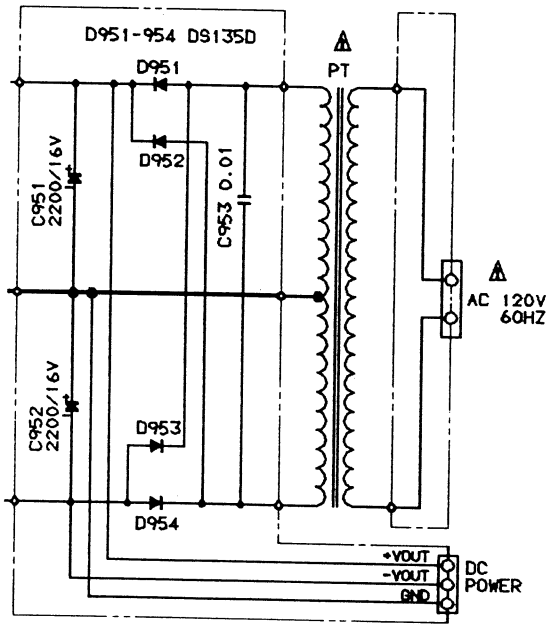

4-285-770-00A
GEMK-73X
FOR SERVICE MODE
GND COM S2 S3 GND -5V
S6 S1 S4 S5
IC401
IC402
IC403
IC501
IC502
IC901
IC201
IC101
IC301
IC302
IC303
IC304
IC305
IC306
C903
C706
C418
Y501
SVR101
SVR102
SVR201
SVR202
TP1
TP2
TP3
TP8
TP9
TP10
TP11
TP36
CLOSE SW S609
LIMIT SW S610
SP.M DRIVE
SL.M DRIVE
+5.2V
-5.2V
GND
+VIN
VDRIVE
VREF
ON/OFF
DEMP
MUTG
SENS
SCOR
WFCK
RFCK
PCK
LRCK
EFM
CLV
SLO
FO
TO
TRK
FOK
RF

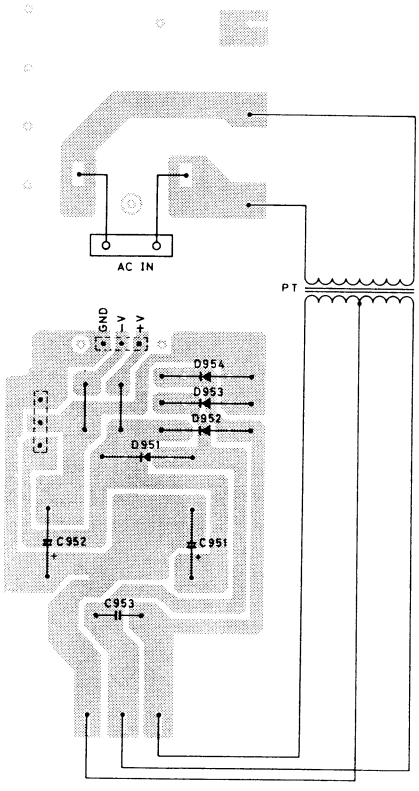
GENERAL





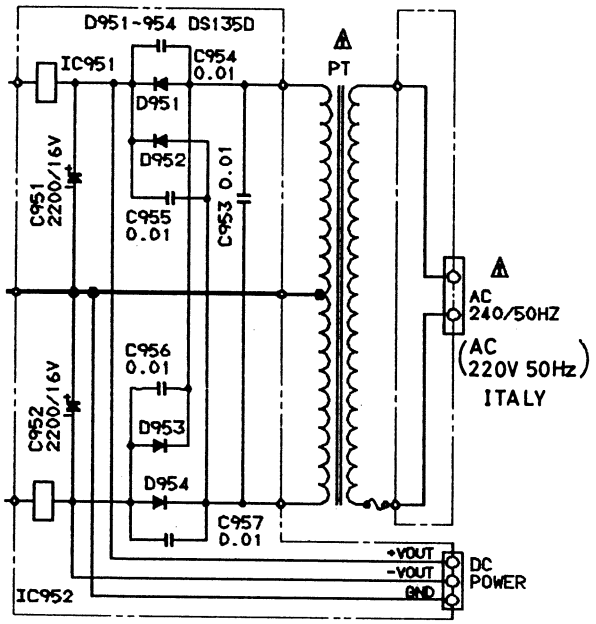
U.S.A
CANADA

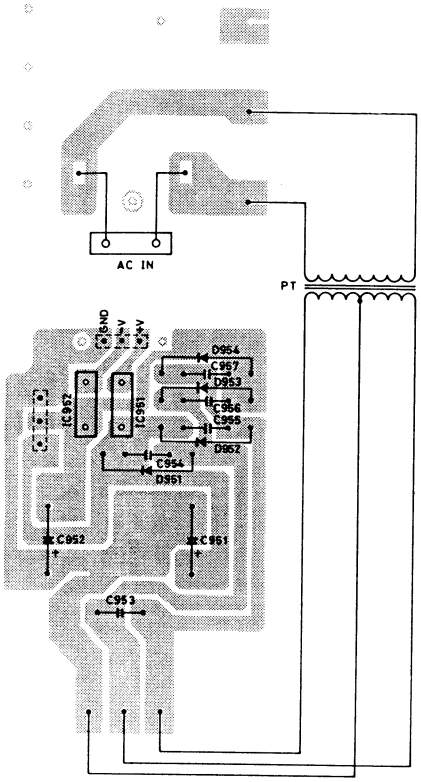




AUSTRALIA
ITALY

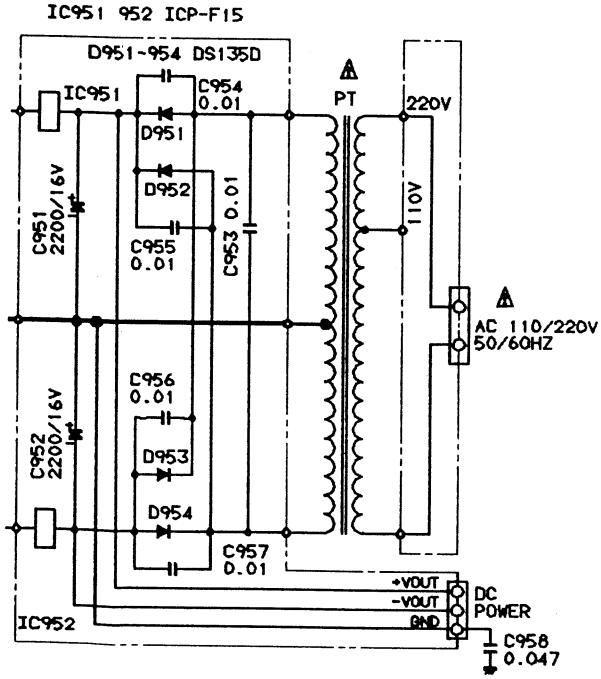
IC951 952 ICP-F15

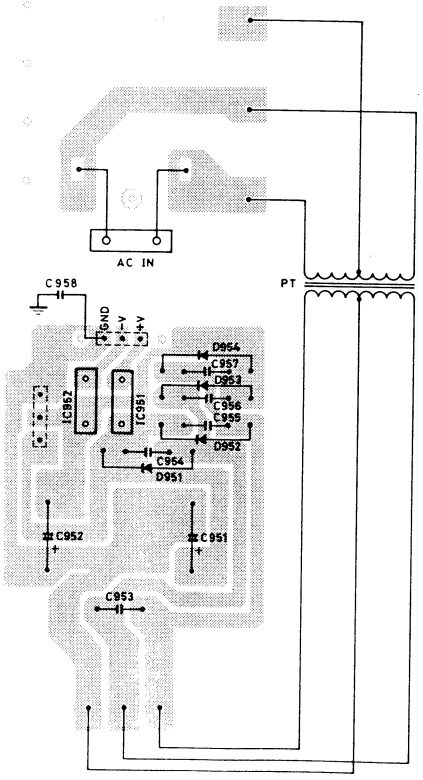




EUROPE

IC951 952 ICP-F15



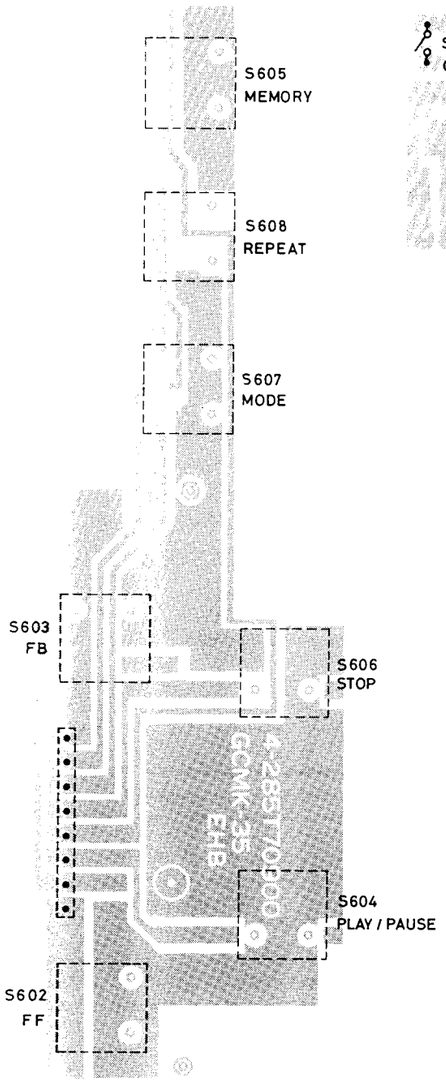


TROUBLE SHOOTING FLOW CHARTS

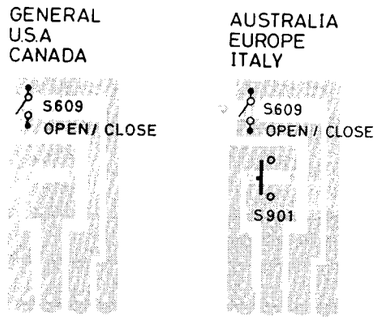
Check AC power cord
Load a disc (not scratched or soiled) and close the lid
POWER switch "ON"
..... The LCD does not display, and the disc does not rotate in this condition.
PLAY key "ON"
Is IC301 pin 3 output voltage normal? (+5V)
NO
Check ±V IN DC POWER supply circuit
Does LCD display?
NO
Is IC501 pin 35 "LOW"?
NO
Faulty contact in S609 (CLOSE switch) or S601 (POWER switch)
YES
Disc starts rotating
NO
Is output of DC POWER BLOCK ±5.2V?
NO
Check POWER ON/OFF voltage
Check IC501 pin 28 (P-CONTL)
YES
YES
*Check operation of sled motor in the service mode
NO
Check soldering of IC401 pins 1 to 4
Focus search takes place and focus servo goes "ON"
NO
*Check focus search operation in the service mode
YES
Is laser emitted? (Do not look at laser beam for a long period.)
YES
YES
NO
Is FOK (IC501 pin 21) "HIGH"?
YES
Check soldering of IC501 pin 21
Readjust focus offset in the service mode
(Player stops after several seconds
Spindle motor runs away
Sled motor runs away)
Is sound heard when 1st tune is played?
NO
Does tracking servo go "ON" and appear RF waves?
NO
Readjust tracking balance in the service mode
YES
(Servo is normal but no sound appears, or sound distorted)
Check soldering of IC401, 402, and 701
Is PLL VCO waveform normal? (Is GFS "HIGH"?)
NO
Readjust PLL VCO
YES
Check bus line of IC401 and 501 sub code.
Check soldering of IC401
Is skip search operation normal?
NO
Is focus tracking gain normal?
NO
Readjust each gain
YES
End of operation check
Check mechanism

WIRING DIAGRAM (OTHERS)

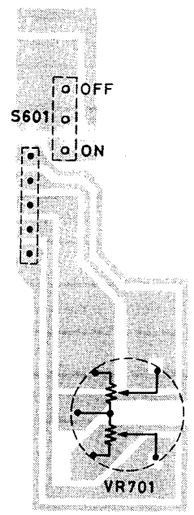
KEY SWITCH P. C. B.



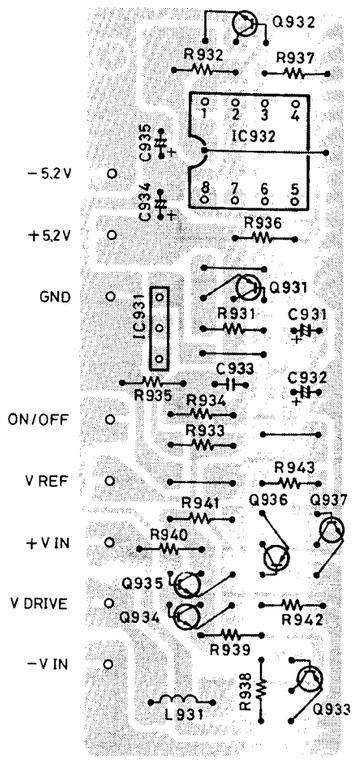
SWITCH P. C. B.



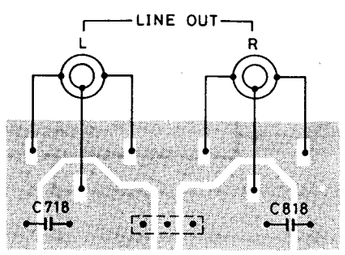
VOLUME P. C. B



SUB. P. C. B.

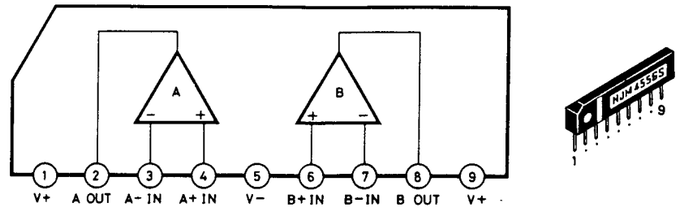


RCA SOCKET P. C. B.

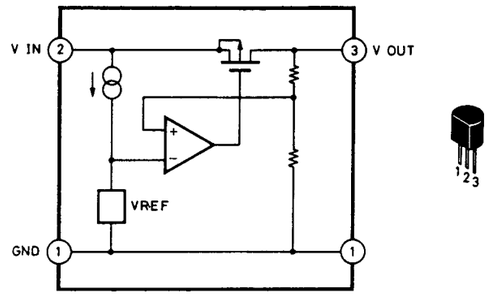


IC BLOCK DIAGRAM

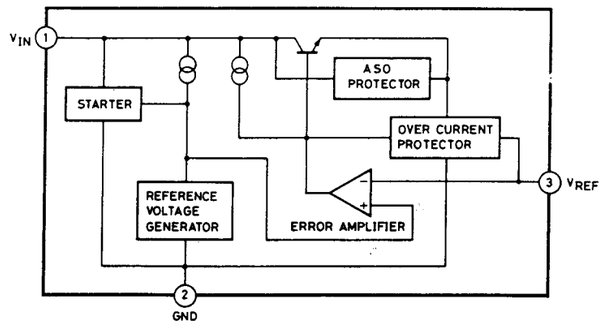
IC706 NJM4556S
DUAL OPERATIONAL AMPLIFIER



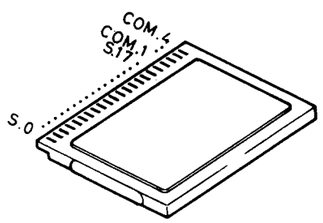
IC901 S8125HG
C-MOS VOLTAGE REGULATOR

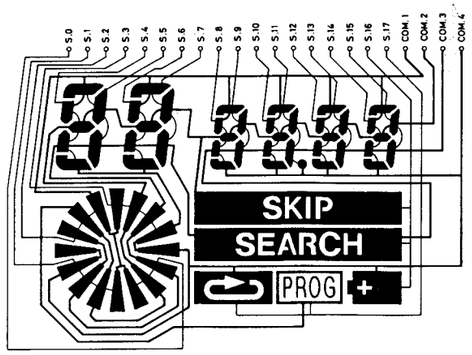


IC931 M5236L
REGULATED POWER SUPPLY



LCD-127-04 LCD





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